Volume XXXVII.
Number 4.

JULY, 1909.

$2.00 per year.
$3.00 with Directory.

TEXTILE WORLD RECORD

LORD & NAGLE COMPANY ~ BOSTON · MASS.

able of Contents, Page 61. Buyers Index, Page 165. Index to Advertisements, Page 175.

Mercerizing Machinery for Piece Goods

— AND —

Yarns in the Warp or Chain

All Kinds of Outfits for Bleaching Thread and Soft Twisted Yarns.
Bleaching Machinery for Yarns in the Warp or Chain.

BLEACHING
DYEING
DRYING
AND
FINISHING
MACHINERY

Singeing Machines, Boiling Kiers, Washers Water, Chemic and Sour Squeezers.

Rusden Patent, Continuous Chainless Steamer, Aniline Agers.

Dyeing Machines, Open Soapers, Blanket Washers, Color Kettles, Horizontal or Vertical Drying Machines, with Copper or Tinned Iron Cylinders.

Water and Starch Mangles, Automatic Tentering Machines, Dyeing Machines for Chain Warps.

Dampening Machines, Calenders for Rolling, Glazing, Chasing and Embossing, also Calenders for Moire Finish.

Sole Manufacturers of Patented Flexible Cloth Expander for Cylinder Drying Machines, Calenders, Mangles, etc.

Combination Rolls Made of Cotton and Husk, especially adapted for Soft Finish, Unequalled for Elasticity and Durability.

Cotton, Paper, Husk, Chilled Iron, Brass and Rubber Rolls, Electro-Deposited Copper Rolls for all purposes.

Padding and Drying Machines for Shade Cloths, Single and Double Cylinder Engines, Hydraulic Presses and Pumps.

Estimates, Drawings and full particulars of complete plants furnished on application

THE TEXTILE-FINISHING MACHINERY CO.

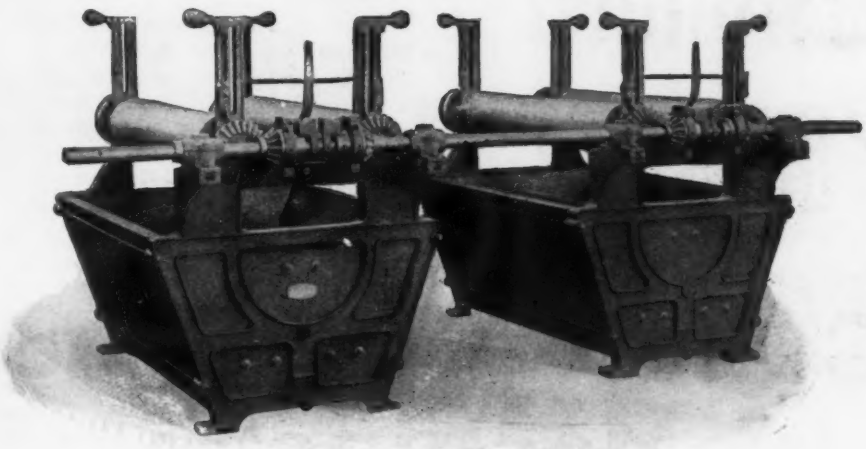
Howard Building, Providence, R. I.

STUART W. CRAMER, Southern Representative, Charlotte, N. C.

H. W. BUTTERWORTH & SONS CO.

PHILADELPHIA, PA.

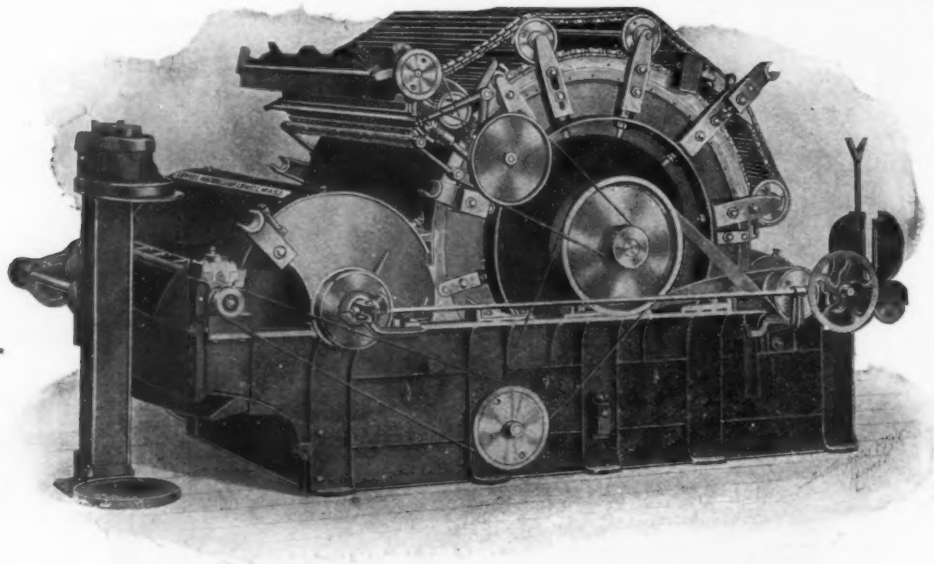
Providence Office, Room 417, Industrial Trust Building.



JIGGER

Bleaching, Drying, Dyeing and Finishing Machinery

for all textile fabrics.



Cotton and Worsted Machinery

With Modifications to Suit Any Class of Work.

Cotton Machinery: Cards, Railway Heads, Drawing Frames, Fly Frames, Speeders, Ring Spinning Frames, Twisters, Spoolers, Reels, Warpers, Slashers, Winders, Looms, Shearing Machines, Balling Machines, Folders, Stamping Machines, Sewing Machines, Size Pumps, Size Kettles, Drawing-in Frames, Baling Presses, Indigo Grinders.

Worsted Machinery: Spinning Frames with caps, rings or flyers, Dandy Rovers and Reducers, Cone Second Finishers, Reducers and Rovers, Gill Boxes for Drawing, Preparing and Finishing, Weigh Boxes and Drawing Boxes, Cap Trap, Flyer and Ring Twisters.

Plans, Specifications and Estimates furnished upon application.

Lowell Machine Shop

LOWELL, MASS.

In ordering new spinning frames,

If you wish to get the best results,

Be sure and insist upon

Centrifugal Clutch Spindles,

Mirror Spinning Rings,

(trade mark reg. U. S. Pat. Off.)

Rhoades-Chandler Separators,

AND

Speakman Lever Screws,

We also build

Northrop Looms

Dutcher Temples
(trade mark reg. U. S. Pat. Off.

Twisters

Spoolers

Warpers

Reels

and other patented specialties
for Cotton and Worsted Mills

DRAPER COMPANY

Hopedale, Mass.

J. D. Cloudman, Southern Agent

40 So. Forsyth St., Atlanta, Ga.

THE EMPHATIC SUCCESS OF OUR "IDEAL" AUTOMATIC LOOM IS DUE TO SEVERAL SALIENT POINTS OF SUPERIORITY OVER ALL COMPETITORS:

1st. The ease and smoothness with which they start up.

2d. The acknowledged superiority of the cloth woven.

3d. Simple and thoroughly mechanical construction, assuring freedom from the constant breakage and expensive repairs attending other automatic looms.

4th. No special bobbins, shuttles or other expensive parts.

5th. Ability to use cop or bobbin filling interchangeably.

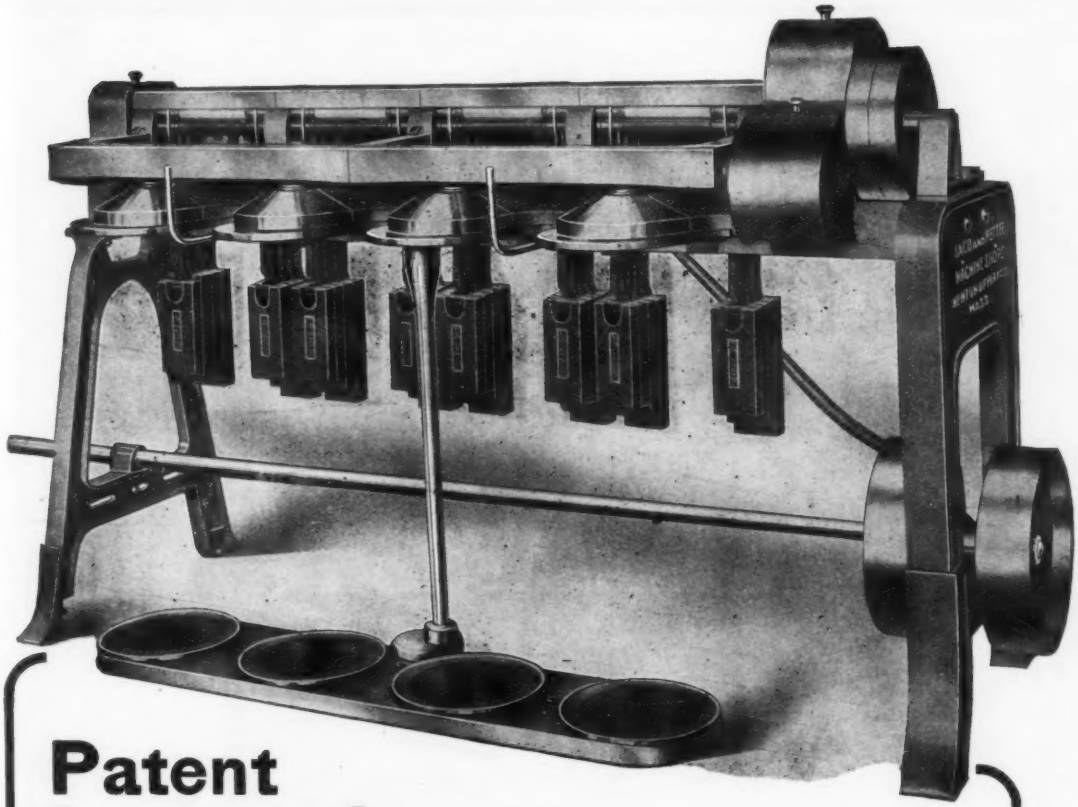
6th. Superiority of warp stop motion which does not break or fray the softest yarn.

7th. Of the thousands in operation not a single bobbin or crank shaft broken.

IN PROOF OF CLAIMS WE POINT TO THOSE MILLS FORMERLY USING OUR COMPETITORS' LOOMS THAT ARE NOW USING OURS.

The Stafford Company

Readville, Mass.



Patent Improved Drawing Frame

This drawing frame has many improvements in design and construction which make it very convenient to handle, more durable, better adapted to the various lengths of staple, and to give a larger production with less waste.

Improvements in Roller Stands, Head End Gear Stands, Calender Rolls, Coiler Gear Covers, Stop Motion Spoons, Calender Roll Cover, Patent Top Clearer, etc., allow this machine to deliver sliver without kinks or bunches and coil it uniformly in cans.

A complete description of this machine with its improvements will be sent free upon request.

Saco and Pettee Machine Shops

Works at Newton Upper Falls, Mass., and Biddeford, Me., U. S. A.

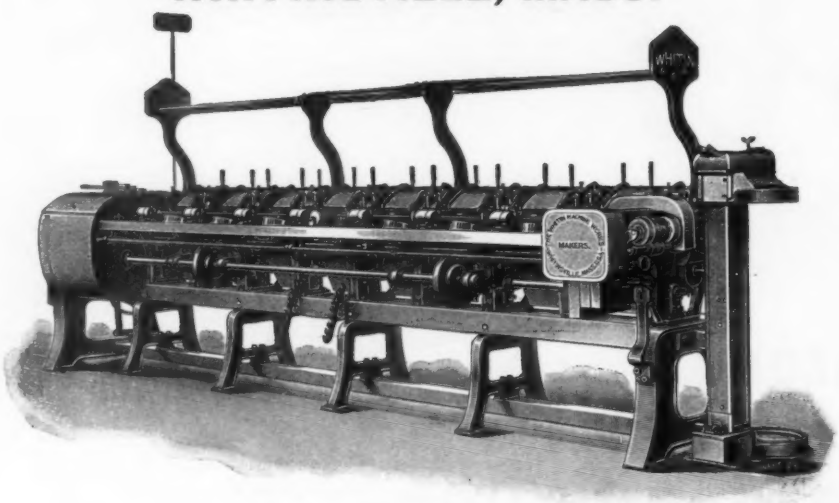
Southern Agent, A. H. WASHBURN, Charlotte, N. C.

THE

WHITIN MACHINE WORKS,

Cotton Machinery

WHITINSVILLE, MASS.



HIGH SPEED COMBER 1906 MODEL.

Revolving Flat Carding Engines,
Sliver Lap Machines,
Ribbon Lap Machines, Combers,
Railway Heads, Drawing Frames,
Spinning Frames, Spoolers, Twisters,
Long Chain Quilling Machines, Reels, Looms.

Southern Agent,
S. W. CRAMER

Trust Building, CHARLOTTE, N. C.
Equitable Building, ATLANTA, GA.

"Kitson Products"

Blowing Systems

For Conveying Bale Cotton
from Storehouse to Picker-room

Self-Feeding Openers
Lappers and
Cleaning Trunks

Waste-Working Machinery

Raw Stock Cotton Dryers

We own the Patterns and can furnish REPAIR PARTS for PICKERS
formerly built by

WHITEHEAD & ATHERTON, . Lowell, Mass.
ATHERTON MACHINE CO., - - Lowell, Mass.
A. T. ATHERTON MACHINE CO., Pawtucket, R. I.

Kitson Machine Shop

Lowell, Mass.

The entire hose or stocking made and put together on one machine

That is what our automatic hosiery machine does; makes the foot and the rib-top on half-hose —or tucked-top on ladies' stockings—all together; and turns out this hosiery in strings by the yard or the mile.

6 1-2 dozen pairs of half-hose per day are made on a 136-needle machine. The machine is built in guages, from the coarsest up to and including 220 needles—3 3-4 One operator can attend to 15 or 16 machines. And one adjuster or fixer can look after 100.

All that is left to do then is to cut the hose apart and loop the toes on any looper.

No skilled topper is needed. You save that labor-cost. And the work goes on as you want it, independent of the skilled operator.

If you are interested, we would like to give you a few figures showing the profit and advantage of these machines.

Scott & Williams

Machinery for knitting mills.

2079 E. Cumberland Street, Philadelphia, Pa., U. S. A.

Do you know how much

higher the temperature of your Spinning Room, Card Room or Weave Room is above the outside temperature when you keep your windows closed, and your heating system is not in use? If you don't know positively, find out

Is it not a fact that when the outside temperature reaches 40 or 50° you can shut off your heating system and the machinery will keep your temperature up to 75°, or even above that if the windows are closed?

Is it not a fact that you find your humidifying system inadequate and the conditions in your Mill the worst for your work during hot summer days?

Do you know why?

Is it not because you have to open the windows in an endeavor to hold down the temperature and you cannot keep the windows open and keep the humidity up at the same time. Do not the draughts from the open windows cause breaking of ends and endless trouble?

Remember the CARRIER SYSTEM absorbs the heat from the machinery in Summer with your windows closed, keeping the mill cool.

Heats the building in Winter.

Hold the Humidity at a fixed point automatically the year round.

Carrier Air Conditioning Company
of America

No. 39 Cortlandt St., New York

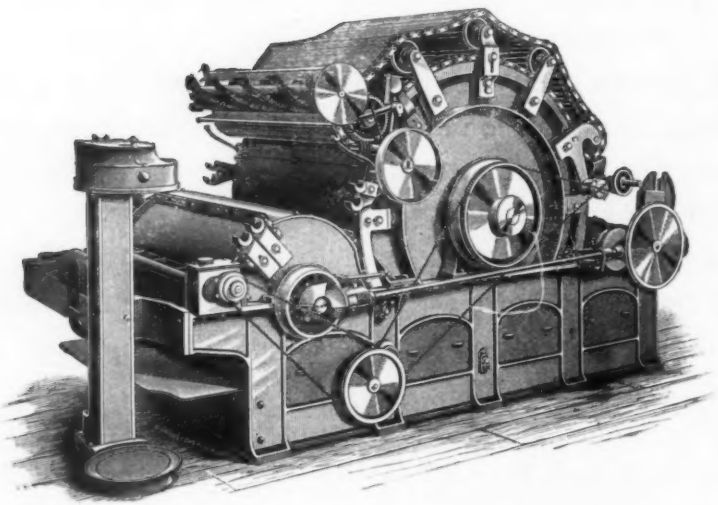
(126-C)

Cotton Machinery

MASON MACHINE WORKS,

TAUNTON, MASS.

Southern Office,
Charlotte,
N. C.



Cards,
Combers, Railway
Heads, Drawing Frames
Spinning Frames, Mules and Looms

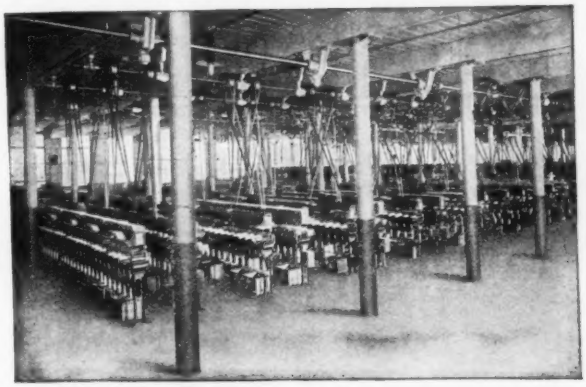
INCLUDING

Plain and Fancy Silk Looms

Winding room of a modern 75000 spindle cotton yarn mill using

No 50 "UNIVERSALS"

exclusively for coning, tubing and doubling.



UNIVERSAL WINDING

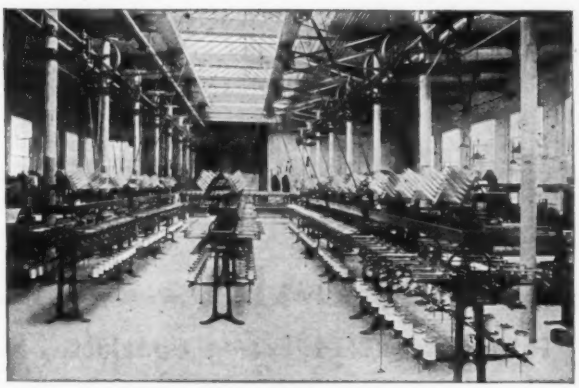
No. 10 "UNIVERSAL"

Loom Cop Winders in a Prominent Silk ribbon mill.

COMPANY - BOSTON

No. 90 "UNIVERSALS"

Installed for Winding Cotton-filling.



IMPORTANT ANNOUNCEMENT

Manufacturers are hereby warned against using infringements upon the Cramer patents for

Automatic Regulators for Humidifying Systems

Before considering the purchase of infringing devices, make sure that the vendor is amply financially responsible and guarantees to imdemnify the purchaser against loss by damage suits, for both infringers and users of infringements, however crude such infringements may be, will be prosecuted to the full extent of the law.

Don't be imposed upon by misleading terms and claims as to what the vendor's patents cover; anyone can get a patent for almost anything in the way of specific constructions; the vital question is whether or not such patents infringe other prior patents.

Cramer System of Air Conditioning

Spray Humidifiers as good as the best, of large capacity, durable, sanitary, air cleansing and efficient.

Air Conditioners *comprising all the good points of spray humidifiers*, particularly as to large moistening capacity and simplicity; *combined with the good points of evaporation types of humidifiers*, such as complete evaporation of the moisture, large air cleansing capacity and good distribution; *and without the objectionable features of either type*, such as wetting down, localized moistening, large and clumsy constructions, unsanitary conditions due to difficulty of access for cleaning and to the use of wet absorbent disease-breeding materials, and largely reduced efficiencies at all except the lowest humidities,—*features*, simplicity, durability comprising only seamless drawn sheet copper casings, a spray nozzle and a fan. The fans are either electrical driven, or mechanically driven with belts or ropes as the special requirements of each case dictate.

STUART W. CRAMER

Providence, R. I. **Charlotte, N. C.** **Atlanta, Ga.**

EVAN ARTHUR LEIGH

232 Summer Street (opposite the South Station), Boston, Mass.

SOLE AGENT

IN THE UNITED STATES AND CANADA FOR

Platt Bros. & Co., Ltd.

BY FAR THE LARGEST MAKERS IN THE WORLD OF

Cotton, Woolen and Worsted Machinery

Platt's Patent Opening and Picking Machinery.
Platt's Cotton Comber will comb from 7-8" stock to Sea Islands.
Platt's Special Machinery for Making Cotton Waste into Yarns.
Platt's Special Machinery for Making French Worsted Yarns.
Platt's Woolen and Worsted Carding Engines, Special Designs.
Platt's Cotton, Cotton Waste, Woolen and Worsted Mules.

MATHER & PLATT, LTD.

Dyeing and Finishing Machinery.
Archbutt-Deeley System for purifying and softening water.

GEORGE HODGSON, LTD.

Looms for Worsteds, etc.

THE PATENT AUTOMATIC FEEDING MACH. CO., LTD.

Patent Feeding Machines for wool, cotton, flax, fur and fibrous material.

JOSEPH SYKES BROS.,
Card Clothing for Cotton.

JAMES CRITCHLEY & SONS,
Card Clothing for Woolen and Worsted.

WILSON BROS. BOBBIN CO.'S.

Bobbins, Shuttles, etc.

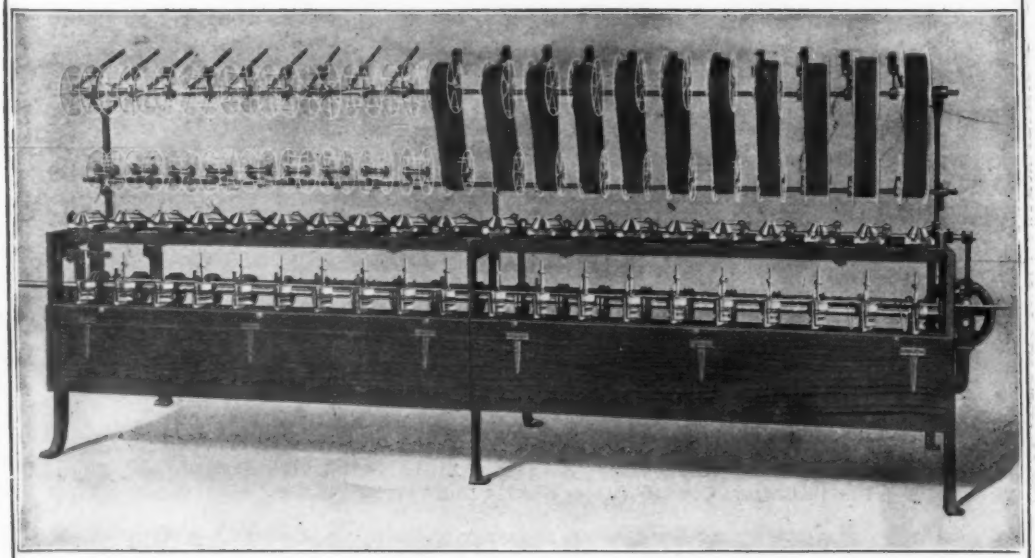
Dronsfield Bros. Grinding Machinery and Emery Filleting. The Best French and English Combing and Rubbing Aprons. Harding's Pins and Circles. Varey's Fallers, etc.

OSWALD LEVER CO.

(Formerly LEVER & GRUNDY.)

MANUFACTURERS OF TEXTILE MACHINERY

SOLE MAKERS OF OUR PATENTED SPECIALTIES
IN THE UNITED STATES



High Speed Cross Quiller to wind from skeins, spools or mule cops onto quills or paper tubes. It is built to run from 1800 to 2400 revolutions.

Conical and Parallel Tube Winding Machines; Warping Machines and Creels; Brass Bobbin Winding and other Machinery for lace mills; Chenille Cutting Machines, Sectional Warping Mill, Beaming Machines, etc.; Cop Winding Machines for butts to weave from outside; Filling Bobbin or Quill Winding Machines; Vertical Spindle Spooling Machine for silk, fine cotton, wool and worsted; Variable Speed Bobbin Machines for large bobbins used in knitting mills; Dresser Spooling Machines; Reeling Machines.

Lehigh Ave. and Mascher Sts., PHILADELPHIA, PA.

JAMES HUNTER MACHINE CO.

NORTH ADAMS, MASS., U. S. A.

Piece Dye Kettle. *Bulletin 53*

The Hunter PIECE DYE KETTLE

A machine that produces results.

No Shading or Uneven Dyeing.

Tank made of 3" CLEAR CYPRESS.

Tongued and Grooved and thoroughly boltcd.

IMPROVED HUMP REEL

FRICTION PULLEY DRIVE

The heaviest, most substantial dye kettle built.

Any size for any number of strings.

Send for Bulletin No. 53.

Get it—This Summer The Turbo Humidifier

Will give you the Maximum Cooling Effect

The results secured from the vaporized water are practically equal to the cooling effect of an equal weight of ice, melted and evaporated.

No other Humidifier will give

Complete Vaporization

of all the water used. The Turbo does. That is the fundamental reason why it always gives complete satisfaction.

But the Turbo-Humidifier is supreme in other desirable and economical features.

Some of these are: the ease with which the degree of humidity and the direction, quantity and fineness of the spray may be varied; the fact that it cannot overflow; its absolute efficiency in preventing dust, soot and lint; its smallness which makes it usuable in the lowest posted rooms; its freedom from "contraptions," drain pipes, water under pressure, moving parts, strainers, cloths, etc., and consequently the economy of operation.

These are some of the reasons why you want the Turbo system of Humidifying. The Catalog gives more. Shall we send it?

The G. M. Parks Company

SOLE AGENT

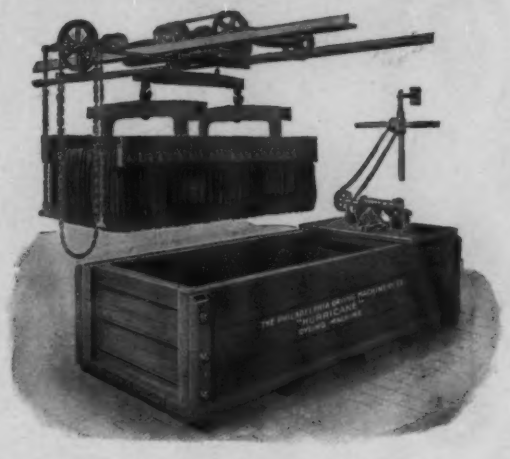
FITCHBURG, MASS.

Southern Office, No. 1 Trust Building, Charlotte, N.C.
B. S. Cottrell, Manager

TURBO TRADE MARK HUMIDIFIER

SAVE IN DYEING

75% in Labor
50% " Steam
35% " Dyes



"HURRICANE"

Circulating Dyeing Machines

For Yarn, Hosiery, Etc.
Are in a Class by Themselves

Patents No. 918,484 and 918,485
April 13, 1909.

ALL INFRINGEMENTS WILL BE PROSECUTED

SINGEING

HOSIERY, WITHOUT BOARDS,—COSTS LESS THAN HALF

What you have paid heretofore
BY USING

"Hurricane" Automatic Singeing Machines

Patent No. 895,711, August 11, 1908
" " 919,999, April 27, 1909

Power Screw and Hydraulic

PRESSES

For Hot or Cold Finishing, make higher prices possible on account of the better finish of the goods.

THE PHILADELPHIA DRYING MACHINERY COMPANY

"Hurricane" Dyeing, Drying and Finishing Machinery
Complete Equipments for Scouring, Bleaching, Carbonizing, Etc.
6721 Germantown Ave., Philadelphia, Pa.

Get it—This Summer The Turbo Humidifier

Will give you the Maximum Cooling Effect

The results secured from the vaporized water are practically equal to the cooling effect of an equal weight of ice, melted and evaporated.

No other Humidifier will give

Complete Vaporization

of all the water used. The Turbo does. That is the fundamental reason why it always gives complete satisfaction.

But the Turbo-Humidifier is supreme in other desirable and economical features.

Some of these are: the ease with which the degree of humidity and the direction, quantity and fineness of the spray may be varied; the fact that it cannot overflow; its absolute efficiency in preventing dust, soot and lint; its smallness which makes it usuable in the lowest posted rooms; its freedom from "contraptions," drain pipes, water under pressure, moving parts, strainers, cloths, etc., and consequently the economy of operation.

These are some of the reasons why you want the Turbo system of Humidifying. The Catalog gives more. Shall we send it?

The G. M. Parks Company

SOLE AGENT

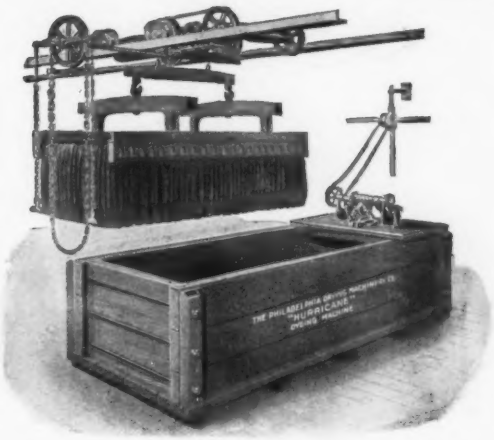
FITCHBURG, MASS.

Southern Office, No. 1 Trust Building, Charlotte, N.C.
B. S. Cottrell, Manager

TURBO TRADE MARK HUMIDIFIER

SAVE IN DYEING

75% in Labor
50% " Steam
35% " Dyes



"HURRICANE"

Circulating Dyeing Machines

For Yarn, Hosiery, Etc.

Are in a Class by Themselves

Patents No. 918,484 and 918,485
April 13, 1909.

ALL INFRINGEMENTS WILL BE PROSECUTED

SINGEING

HOSIERY, WITHOUT BOARDS,—COSTS LESS THAN HALF

What you have paid heretofore

BY USING

"Hurricane" Automatic Singeing Machines

Patent No. 895,711, August 11, 1908
" " 919,999, April 27, 1909

Power Screw and Hydraulic

PRESSES

For Hot or Cold Finishing, make higher prices possible on account of the better finish of the goods.

THE PHILADELPHIA DRYING MACHINERY COMPANY

"Hurricane" Dyeing, Drying and Finishing Machinery

Complete Equipments for Scouring, Bleaching, Carbonizing, Etc.

6721 Germantown Ave., Philadelphia, Pa.

Duxbak Waterproof Leather Belting

Your insurance against shut downs on line shafts and machines is worth much more than the cost of any Belting.

Duxbak Waterproof Leather Belting insures steady running with the least possibility of a stoppage in working hours.

Have you noticed the disposition of machine builders, who have tried other methods, to get back to belt drives?

Profit by other peoples mistakes and at the same time secure the best kind of a belt drive by using Duxbak.

It's waterproof.
It's stronger in fibre and pull than any other belting made.

There are no "Seconds" in DUXBAK LEATHER BELTING—
There can be no "nearly waterproof" DUXBAK deliveries.

Every inch of it is guaranteed by forty-one years of supremacy in tanning and belt making.

Chas. A. Schieren Company

NEW YORK, 29 Ferry Street.
PHILADELPHIA, 226 North 3d St.
CHICAGO, 84-86-88 Franklin St.
BOSTON, 641 and 643 Atlantic Ave., opp. South Station.
PITTSBURG, 205 Wood St.
DENVER, 1622 Wazee St.
BROOKLYN, N.Y. cor. 13th St. and 3d Ave.
HAMBURG, GERMANY, Auf dem Sande 1.
OAK LEATHER TANNERIES, Bristol, Tenn.

The Whaleback

An Improved Piece-End Sewing Machine

Designed especially for piece-end sewing in Bleaching, Dyeing, Printing and Finishing Works, it holds the cloth taut in the piece during stitching, obviates narrowing-in of the ends of the piece thus saving in "shorts."

The **steel-spiked chain** follows the shape of the frame, over a **solid** bed. This insures steadier running and a **more even stitch** than is possible with spiked wheels running on carrier bowls.

The full width of the cloth may be fastened at once—saving both time and labor.

There is a special stripping arrangement with a cutter that trims the edges of the seam, to which an automatic tar-mark stamping device can be attached if desired.

A New Piece-End Sewing Machine

Embodying Some Very Great Improvements

It has a special steel link chain for the guide pins, taking the place of the objectionable solid ring. The ratchet motion is made in one solid piece, thus dispensing with troublesome set screws.

Neither loose threads or fluff can get into the bearings as the top shaft is enclosed.

The needle bar is square and works against a true milled surface.

The height of machine is adjustable, and there is ample space for working the treadle.

You can reduce your time and labor costs and get better work with this machine than with any other makes.

We are Sole Agents for The New Patent Pneumatic Beetle

Thos. Leyland & Co., F. T. WALSH, Manager 60 India St., BOSTON, MASS.

American Textile Specialty Machinery Co.

670 Eddy St., Providence, R. I.

MANUFACTURERS OF

SHUTTLES AND SHUTTLE IRONS

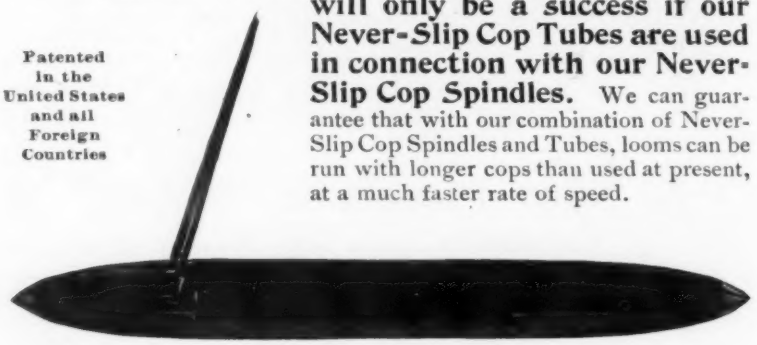
FOR ALL TEXTILE PURPOSES

Never-Slip Cop Tube

Patent applied for.

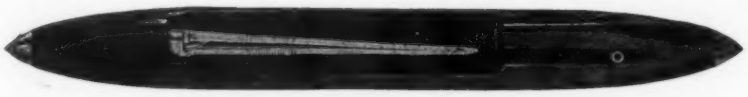
Filling-Waste is reduced to nothing and long Cops will only be a success if our Never-Slip Cop Tubes are used in connection with our Never-Slip Cop Spindles. We can guarantee that with our combination of Never-Slip Cop Spindles and Tubes, looms can be run with longer cops than used at present, at a much faster rate of speed.

Patented in the United States and all Foreign Countries



Shuttle with Spindle Raised

U. S. Patents: 778851, Jan. 3, 1905; 790611, May 23, 1905; other patents pending



Shuttle with Spindle Lowered

U. S. Patents; 778851, Jan. 3, 1905; 790611, May 23, 1905; other patents pending

We also manufacture a complete line of

Paper Cop Tubes, Cones and Shells

Send your samples and we will quote prices on any lot desired

New York Office, 363-373 Rider Ave.

General Electric Company

Individual Motor Drive in the Picker Room

In a picker room the nearest approach to ideal operating conditions is attained when each machine is driven by an individual General Electric motor.

There is no doubt about this in the minds of those who use General Electric motors.

One mill superintendent says:—

"The individual drive in our picker room is giving entire satisfaction. It is much better than the old method of driving from shafting, besides it saves in power, as there is no shafting to drive, and when the pickers are stopped, they are not consuming any power."

If you are building a new mill or changing an old one, our Mill Power Department would like to discuss the matter with either your Consulting Engineer or your Superintendent.

Mill Power Dept
84 State Street
Boston, Mass.

Principal Office
Schenectady, N. Y.

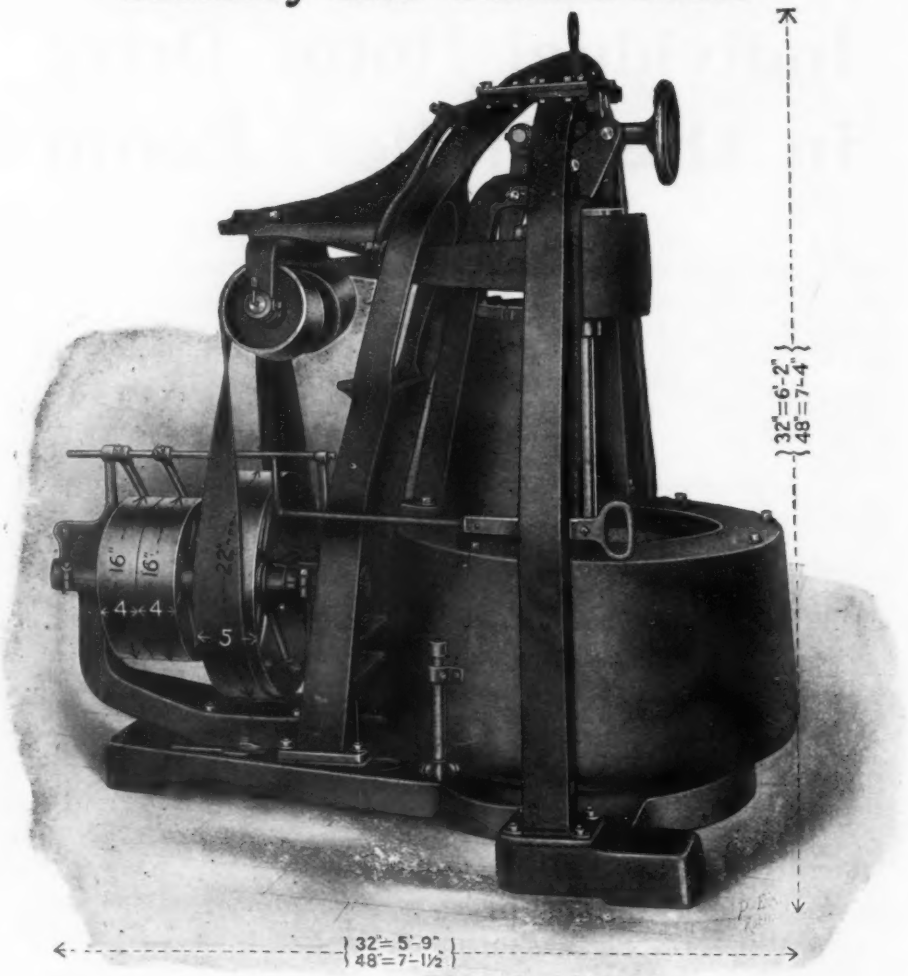
New York Office
30 Church Street

2129

Open Driven Extractors

FOR

Hosiery and Textile Mills



The American Laundry Machinery Mfg Co

Western Division
78-80 Franklin St.
Chicago

Eastern Division
132-138 W. 27th St.
New York

Southern Division
Station "H"
Cincinnati

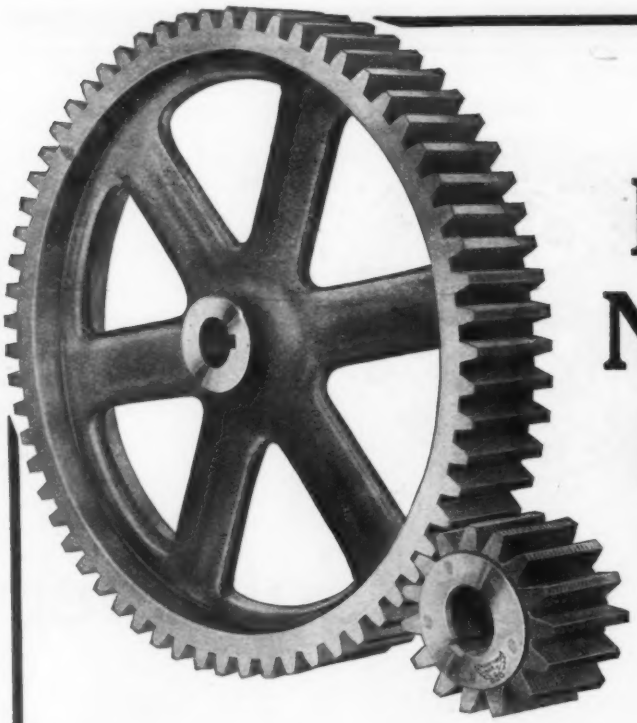
Globe Cotton Softener

is a pure soluble product made from vegetable oil which replaces TALLOW and other substances as a softener and lubricant in the sizing, dyeing, finishing and bleaching of cotton yarns, fabrics, knit goods, etc.

Globe Cotton Softener modifies the stiffness and harshness due to the materials used in the various process.

When used by itself for softening, "oiling" or "greening" bleached and dyed goods, yarns or **knit** goods gives a full mellow feel and brightens the colors **without** greasiness.

Corn Products Refining Co., New York



New Process Noiseless Pinions

Make an ideal motor drive.

By their use you secure a noiseless positive drive with no decrease in efficiency. They will wear like iron.

NEW PROCESS PINIONS also reduce objectional vibrations and are therefore, the best for high speed drives.

New Process rawhide is cured by our secret process which makes it different from the ordinary kind.

For twenty years we have been making gears and we stand back of our product with a guarantee as to quality and workmanship.

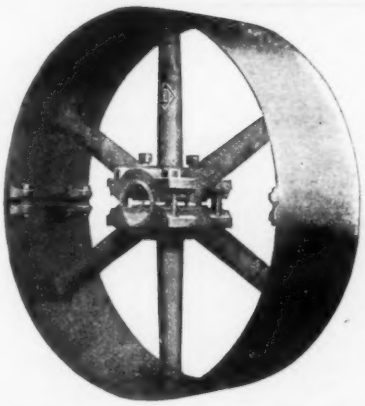
We make all other kinds of gears as well as rawhide. May we tell you more about them?

Descriptive Catalogue for the asking.

The New Process Raw Hide Company

Syracuse, N. Y.

Dodge "Standard" Split Iron Pulley



Here is the pulley that power men everywhere are talking about—and thousands of them installing—because there is no other split pulley like it, no other that gives such positive profitable service.

The Dodge Standard Split Iron Pulley is cast whole and the rim split by fracture at the parting lines, then bored, turned, ground and balanced. Being perfectly balanced, when mounted on shaft by bolting the rim-halves together, it is round and always runs true.

Rim, arms and hub being integral and non-flexible, it stays round.

Fitted with interchangeable bushings, it fits any shaft.

Interchangeable Split Bushings for Dodge Standard Split Pulley

Fastened to shaft by compression and the fastening anchored by two set screws—an exclusive Dodge idea—it holds fast.

The Dodge Standard Split Iron Pulley is made in standard sizes from 6 to 54 inches in diameter.

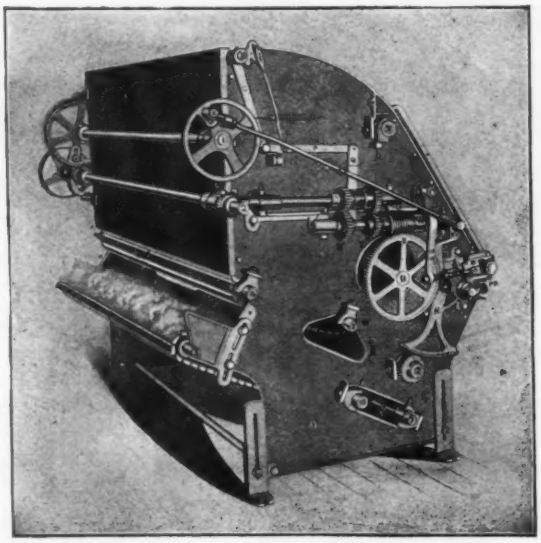
Your orders will be filled immediately by mill supply dealers in almost every city, by one of our eight branches or direct from our factory. Write us for full and interesting information about better service and greater economy in power transmission.

Dodge Manufacturing Company, STATION G 46 **Mishawaka, Ind.**

NEW YORK CHICAGO BOSTON ST. LOUIS
CINCINNATI PHILADELPHIA PITTSBURG BROOKLYN

Everything for the Mechanical Transmission of Power

THE FISHER PATENT CARD FEED



Write Us For List of Mills Where Machines Are Used.

Woonsocket Machine and Press Company

WOONSOCKET, R. I.

SMITH, DRUM & CO.

"BUILDERS OF THE BEST"

Labor Saving Machinery for Dyeing, Singeing and Finishing

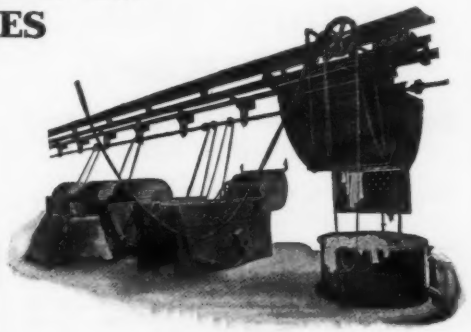
HOSIERY

IN SULPHUR, ANILINE, DEVELOPED BLACKS AND COLORS
POWER SCREW PRESSES and MERCERIZING MACHINES

SAVE LABOR and **DYE STUFF** and do **BETTER WORK** in your dye house by using

SMITH, DRUM & CO. MACHINES

Full Particulars on Application



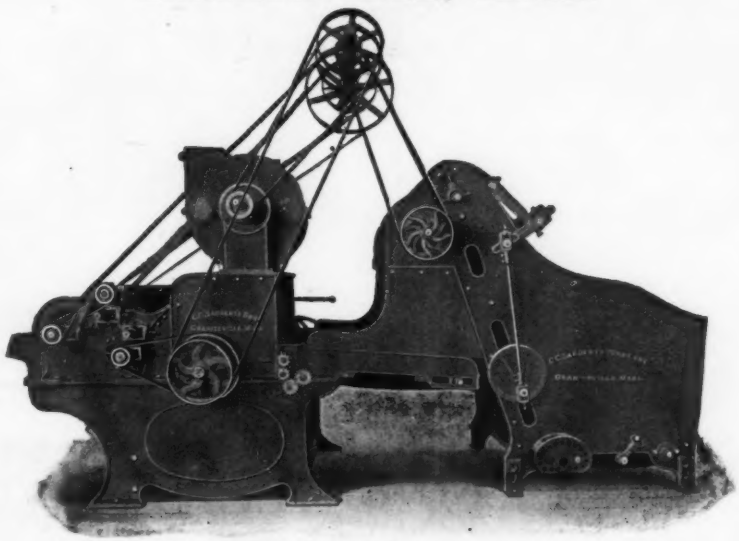
CORAL AND CUMBERLAND STREETS

PHILA., PA.

C. G. SARGENT'S SONS

CORPORATION

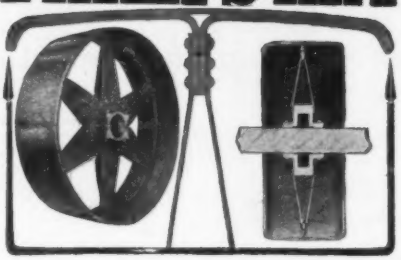
GRANITEVILLE, MASS.



Multiplex Burr Picker and Self Feed.

The advantages of this Burr Picker are readily apparent to any practical mill man. It is the only Burr Picker having two guards, both of which knock the burrs out of the machine, and away from the approaching wool. Both surfaces of the lap of wool are cleaned. Our catalog tells more about it, shall we send it ?

PHILIPS RIM



Study This Construction

One Single sheet of steel forms the Philips Rim.

Notice how the double thickness of steel is flanged on both ends; extends toward the center, where the edges project at right angles to the face to form the rigid central rib, directly to which the spider is riveted.

Just imagine a great lateral strain on this Philips Rim and see how the one piece construction which "ties" the sheet rigidly on the opposite side will take up this strain to prevent the usual distortion of the pulley.

Notice the even, perfect crown, unbroken by grooves or rivets and realize what increased belt contact and therefore increased power you can get from a Philips Pulley,—what it would mean to your plant in a year.

Notice the spider riveted to *outside* of hub and the separation of spider arms at this place—another proof against lateral strain.

We want to *tell you all* about this Philips Pulley, so please send us your name on a postal.

PHILIPS PRESSED STEEL PULLEY WORKS

Philadelphia, Pa.

SPINDLES

EASTON AND BURNHAM MACHINE CO.

PAWTUCKET, R. I.

REPAIRS FOR RABBETH SPINDLES

C. & K. Dobbies

are best adapted to every requirement — always the leaders in efficiency and economy.

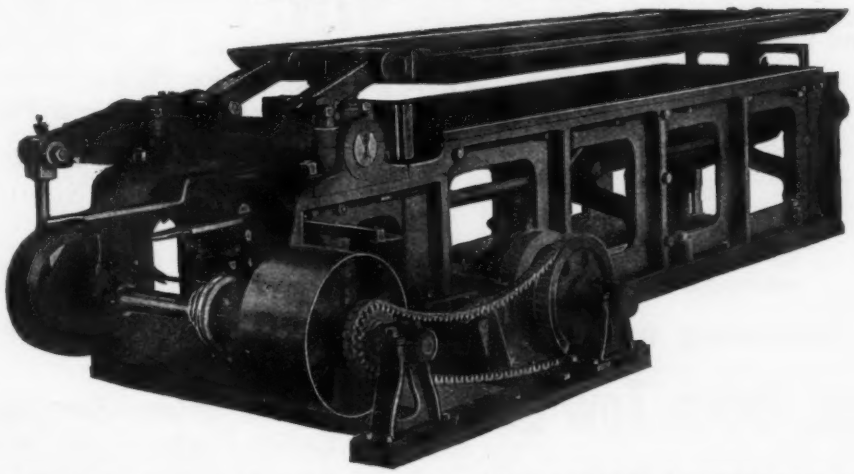
We apply them to any and all makes of looms.

Crompton & Knowles Loom Works

Worcester Providence Philadelphia

Farrel Foundry & Machine Co.

ANSONIA, CONN.



SINGLE AND DOUBLE FELT HARDENERS.

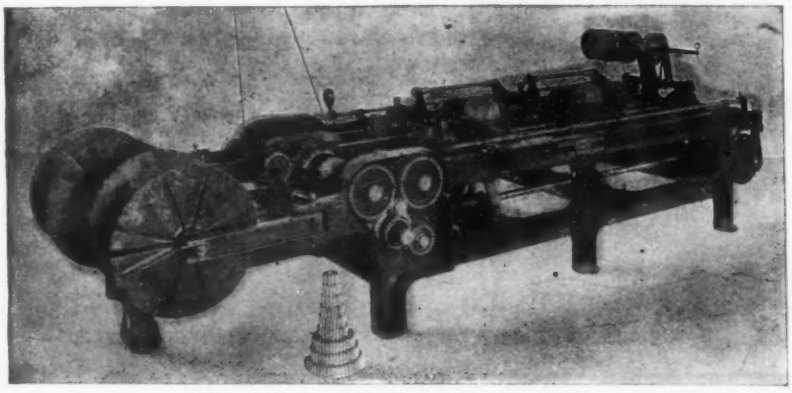
Chilled and Soft Iron Rolls. Heavy Transmission Machinery.

Machine Molded and Machine Cut Gearing, to 20 ft. diameter, Etc., Etc.

Heavy Castings, in Gray Iron or Semi Steel.

The Haskell-Dawes Machine Co.

176 Federal Street., Boston, Mass. Works: Frankford Junction, Philadelphia



Spinning, Forming, Twisting and Laying Machinery.

We build the Very best type of

Modern, High Speed, Geared Machines

For Making Cotton, Flax, Jute and Manila Rope and Twine.

AGENTS SAMUEL LAWSON'S SONS' JUTE AND FLAX MACHINERY.

LAWSONS

Hope Foundry, LEEDS, England

BRANCH OF

Fairbairn Lawson Combe Barbour, Ltd.

MAKERS OF MACHINERY FOR

Preparing and Spinning

Flax, Hemp, Tow and Jute

Special Machinery for the Manufacture of Twines, Rope Yarns and Binder Twine

Good's Combined Hackling and Spreading Machine.

Long Reach Screw-Gill Drawing Frames. Chain-Gill Drawing Frames with Apron Heads.

Patent High-Speed Horizontal and Automatic Spinning Frames for Manila.

Improved Laying Machines.

Haskell-Dawes Tubing Twisters.

Brownell's Patent Twisting and Laying Machines for Twine.

N. B.—Complete Plans and Estimates for Flax, Tow, Hemp and Jute Mills, Trawl Twine Factories and Steam Ropeworks.

6% of Noils Saved

by the use of

75% Olive Oleine

A guaranteed saving of 6 per cent of noils can be made over the use of lard or similar oil by using our **75 per cent Olive Oleine.**

It is not a viscous oil that causes trouble every time the temperature drops, and its use will enable the mill to start its cards or combs as easily Monday morning as any other.

This Oleine is a known quantity of standard worth. It hasbeen used by Yorkshire, (England) worsted mills spinning 60s and under for years.

Being distilled on a fixed formula it is always the same. Every batch oiled with it will run equally well.

Distilled wool grease oleines are **"The Natural Wool Oils."**

Samples and prices on request.

H. G. McKerrow Company, Ltd.

88 Broad Street, Boston, Mass.

Make Your Own Bleach Out of Salt Water

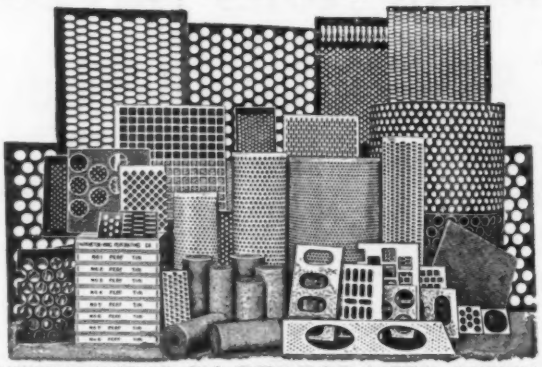
We can supply the Knitting Mill trade with an Electrolyzer for the production of bleaching liquor out of ordinary salt water by means of an electrical current, at a very small cost compared with what it will do. Does away with chloride of lime entirely; reduces the amount of sour; no danger of tendering goods. Operates under direct current. Hundreds in use. Prices and full particulars on application.

The National Laundry Machinery Co.

Dayton, Ohio, U. S. A.

PERFORATED METALS FOR TEXTILE MILLS

Used in
Dye Tubs,
Rinse Boxes,
Strainer Bottoms,
Scouring Tanks,
Steam Boxes,
Wool Scouring
Plates.



Used in
Burr Pickers,
Grabbing Machines,
Dyeing Machines,
Extractor Baskets,
Steam Finishing
Machines.

EVERYTHING IN PERFORATED METAL

Perforated Brass and Copper for Wool Washing Machinery.
Perforated Steel (black or galvanized) for Dusters, Reels, Drying Floors,
False Bottoms, Drainers, etc., etc.
ALL SIZES OF STEEL SURFACING.

It has been our business for many years to meet every need in this line and we have both the experience and facilities to do it. As most of this work is made to order send complete specifications.

THE HARRINGTON & KING PERFORATING CO.,
230 North Union Street,
CHICAGO

New York Office, 114 Liberty Street.

The Mercerizing Question

Is solved if you use the

Swiss System

No boiling or moistening.
No breaking of the thread and no streaks.
Better strength, elasticity, lustre and softer touch.
Largest production and lowest consumption of caustic lye.
Absolutely even dyeing in the most difficult shades.

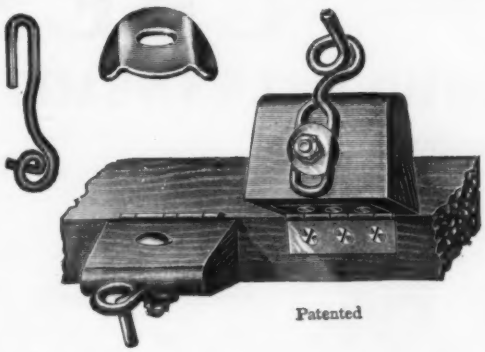
The MERCERANINE PROCESS.
The Automatic Skein MERCERIZING MACHINE with progressive elastic attention.
The Evaporating-Apparatus for the Caustic Lye.
The SILK-FINISH LUSTERING Machine.
The cold air DRYING MACHINE for cross-spools, cops, bobbins and hosiery.

Swiss Textile Industry Company

Of BASEL, SWITZERLAND

Exclusive American Agent,
A. W. BUHLMANN, ENGINEER
487 Broadway Silk Exchange Building New York

The accompanying illustration shows the **Palmer** adjustable thread guide for spinning and twisting. This guide is **Adjustable** in all directions and can be rigidly and permanently fixed. **Thread** boards and rails of metal which are expensive are not necessary with this **Guide**



Patented

SEND two clappers for free samples for circular.

The Palmer Revolving Guide for Wet and Dry Twisting

Patented

Lays the fiber closer
Makes a smoother twist
Saves power
Will outwear many wire guides

THE I. E. PALMER CO., Middletown, Conn.

We have the Largest Exclusive Spool Manufacturing Plant in the World with a capacity of 10,000 High Grade Bushed Spools per day.

Our splendid facilities guarantee prompt and immediate deliveries. Our equipment, than which no better exists, guarantees the highest grade of all hard wood spools of the highest quality procurable at medium prices.

COTTON WARPER SPOOLS, COTTON TWISTER SPOOLS, WORSTED ROVE SPOOLS, CARPET CREEL SPOOLS, WORSTED REDUCER SPOOLS, WOOL WARP SPOOLS.

We can give one week deliveries on any order of the above kinds of spools.

Lestershire Spool & Manufacturing Co.,
LESTERSHIRE, N. Y.

"NO WASTE"

Is the name of the only

Seamless Hard Fibre Roving Can

MADE FROM PURE CHEMICAL HARD FIBRE

NO SEAMS or RIVETS

Absolutely Smooth

No Waste or Broken Ends

Write for prices.

MANUFACTURED BY THE

Standard Fibre Co.
SOMERVILLE, MASS.

CRESSON

POWER TRANSMITTING MACHINERY

RING OILING HANGER
"PHILADELPHIA PATTERN"

Shafting Pulleys
Couplings Fly Wheels
Hangers Gears

Rope Driving a Specialty

Power Plants Designed and Equipped

Prices Right Shipments Prompt
Catalogs for the asking

CAST IRON
SPLIT PULLEY

GEO. V. CRESSON CO.

ENGINEERS FOUNDERS MACHINISTS

PHILADELPHIA, PA.
Allegheny Ave., West of 17th St.

NEW YORK CITY
90 West Street

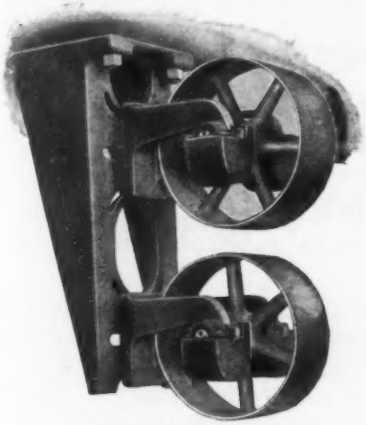
Darrow-Mann Company

New River Consolidated Coal & Coke Co.'s

New River Coal

Nonpareil Bituminous . . All Rail and Tide Water
Gas Coal and Gas Slack . All Rail and Tide Water
Nos. One, Two and Three, Buckwheat

30 Kilby Street, - Boston, Mass.



Adjustable Binder Frame for belt drives to Spinning Frames, Twisters, etc.

WM. SELLERS & CO., Incorporated

Philadelphia, Pa.

Makers of

Shafts,

Couplings,

Pulleys,

Hangers,

and all most approved appliances for the

Transmission of Power by Belts, Gears or Ropes

Catalogue upon request.

Machine Tools,

Injectors, Power Cranes.

Patented in the United States and Foreign Countries.

"If you want the best specify the

American Wrought Steel Split Pulley

with rim of one layer of metal, grooved in center, stiffened by internal central flanges, and rolled beads on edges, six duplex steel arms, radiating from a steel hub and without rivets between hub and rim. More than 1,000,000 in use giving entire satisfaction. Sold by Supply Houses everywhere."

Send for Booklet.

The American Pulley Company

29th and Bristol Sts., Philadelphia, Pa.

ONEIDA

STEEL PULLEYS WILL SOLVE YOUR PULLEY PROBLEM FOR ALL TIME.

NOTICE THE DESIGN AND CONSTRUCTION.

MADE IN WIDEST RANGE OF SIZES OF ANY STEEL PULLEY IN THE WORLD.

DIAM.—6 TO 104 IN.

FACE.—3 TO 40 IN.

BORE—1 TO 8 IN.

THEY ARE BUILT TO FILL ALL CONDITIONS OF SERVICE AND EXCEL IN DURABILITY AND EFFICIENCY. THEY ARE LIGHT, STRONG AND ARE PERFECTLY RIGID.

SOLD BY MILL SUPPLY HOUSES EVERYWHERE SEND FOR OUR LATEST CATALOG AND DESCRIPTIVE MATTER SHOWING CONSTRUCTION ALSO ILLUSTRATIONS OF LARGE SIZES.

Oneida Steel Pulley Co.,

Oneida, N. Y.

WM. FIRTH, Pres. EDWIN BARNES, Vice-Pres. JOHN H. NELSON, Treas.

WILLIAM FIRTH CO.

Post Office Square Building, 79 Milk St., Boston, Mass.

SOLE IMPORTERS OF

ASA LEES & CO., Limited

TEXTILE MACHINERY

OF EVERY DESCRIPTION FOR COTTON, WOOLEN AND WORSTED.

Sole Agents for

JOSEPH STUBBS, Gassing, Winding and Reeling Machinery for Cotton, Worsted and Silk.
GEO. ORME & CO., Patent Hank Indicators, etc.
WILLIAM TATHAM & CO., Waste Machinery.
R. CENTNER FILS, Heddles.
GOODBRAND & CO., Yarn Testing Machinery, Warp Reels, etc.
JOSHUA KERSHAW & SON, English Roller Skins, etc.
BUCKLEY & CROSSLEY, Spindles, Flyers and Pressers for Cotton, etc.
GEO. SMITH, Doffer Combs, etc.
BRADFORD STEEL PIN MFG. CO., Comber Pins.
THE PREMIER SPINDLE & FLYER CO., Halifax, Eng., Cops, Tubes and Spindles for Worsted, etc.

Also Agents for

JOSEPH SYKES BROS., Hardened and Tempered Steel Card Clothing for Cotton.
DRONSFIELD BROS., Limited, Emery Wheel Grinders, Emery Fillet and Flat Grinding Machines.
COTTON CORD & VELVET CUTTING MACHINE CO., Corduroy Cutting Machines, etc.

Pick Classes, Leather Aprons, Patent Wire Chain Aprons, Etc.

REDUCE YOUR FIRE RISK

You can reduce the danger from fire and greatly improve the order and sanitary conditions in your plant by installing

Federal Welded Frame Lockers

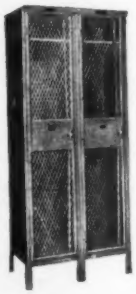
They are fire-proof, germ-proof, vermin-proof, and thief-proof. Built in sizes and styles for every need.

STEEL { Factory Equipment / Office Furniture | Clothes Lockers / Filing Devices } STEEL

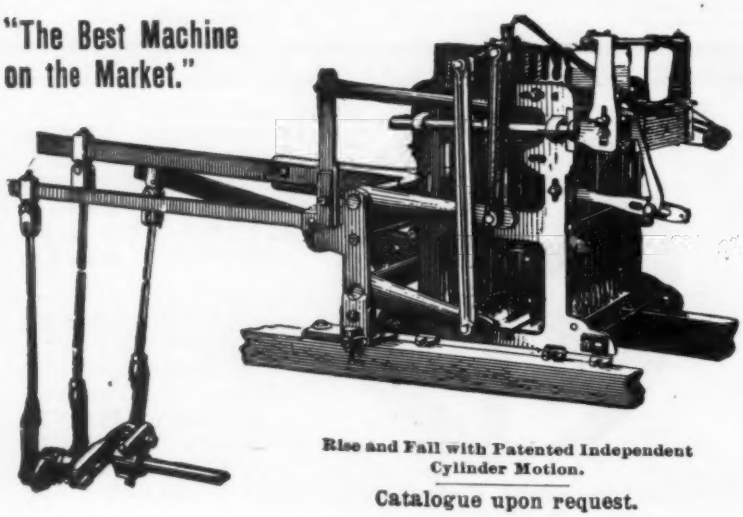
Send for catalogue and prices

W. S. WILLIAMSON, Manager

123 Liberty Street, NEW YORK



"The Best Machine on the Market."



Rise and Fall with Patented Independent Cylinder Motion.

Catalogue upon request.

USE THE

HALTON JACQUARD

Original Fine Index Machines

Single Lift, Double Lift, Double Cylinder, Rise and Fall, Crossborder,

THOMAS HALTON'S SONS,

Allegheny Avenue and C Street, PHILADELPHIA

Representative
H. A. Forbes, Paterson, N. J.

WILLIAM FIRTH, Pres. THE FRANK B. COMINS, Vice-Pres. and Treas.

AMERICAN MOISTENING COMPANY

79 Milk Street, Boston, Mass.

Received the HIGHEST AWARD on recommendation of the FRANKLIN INSTITUTE for

"Simplicity and Originality of Design."

Is the largest manufacturer of HUMIDIFIERS in the World. The last twenty years receiving the HIGHEST AWARD in this country and Europe for its AIR-MOISTENING SYSTEM. EIGHT GOLD MEDALS and others.

The Only Perfect System of Air Moistening

Has Been Adopted by the Representative Manufacturers of this Country.

The only System adopted in the Textile Schools. Write for booklet "T" on Humidification. Legal proceedings will at once be taken against infringers and users of infringements.

J. S. COTHRAN, Southern Representative, Trust Bldg., **CHARLOTTE, N. C.**

The Cotton Duck used in Lane Baskets

is extra quality, extra heavy weight, woven close and hard. Its great tensile strength, smoothness and impenetrability make it a most desirable and ideal material for this use.

Sold direct or through principal Supply Houses.

See our Descriptive Catalog and Price List No. 37.

FIG. 20.

MANUFACTURED ONLY BY

W. T. Lane & Brother, Office & Works **Poughkeepsie, N. Y.**

Crabbing, Steam Finishing, Opening and Folding, Tacking, Sewing, Squeezing Machines

BIRCH TREE.

BIRCH BROTHERS, SOMERVILLE, MASS.

ALBERT BIRCH, TEXTILE MECHANICIAN

BIRCH TREE.

Bleaching and Napping Machinery

EVERY BARREL

of every grade of

Breton Oils for Wool

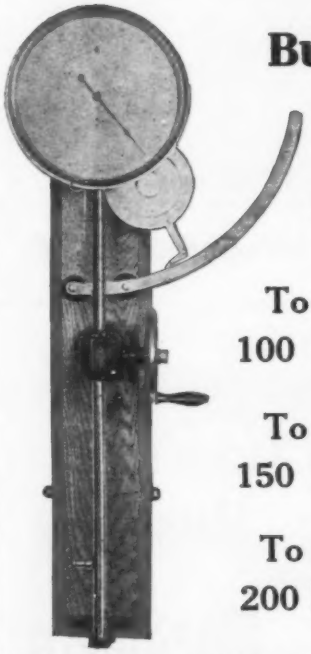
1880—1908

is manufactured at our own works from the finest materials with careful laboratory tests and is guaranteed to do the work for which it was made. That's why the same mills use them year after year. Sold subject to approval and test.

BORNE, SCRYMSER COMPANY, 80 South Street, New York

Boston Fall River Philadelphia Works: Claremont, N. J.

Improved Yarn Tester



Built in 3 Sizes

To test to 100 Pounds

To test to 150 Pounds

To test to 200 Pounds

Henry L. Scott & Co.

225 - 233 Eddy Street, Providence, R. I.

DINSMORE

Mill Sewing Machines

No. 9.—Portable Foot-Power Rotary Sewing Machine

It is especially adapted for use in Cotton and Woolen Mills, Bleacheries, Print Works at the Printing Machines, in Dye Works, Cloth Rooms, at the Fulling Mill, Shears, Calendars, Gigs, Drying Machines, etc., or any of the different finishing processes in textile mills.

Manufactured by the

DINSMORE MANUFACTURING CO.,

Salem, Mass., U. S. A.

Work will run better in your carding,
spinning and weaving rooms
when properly ventilated.

The Berry Wheel

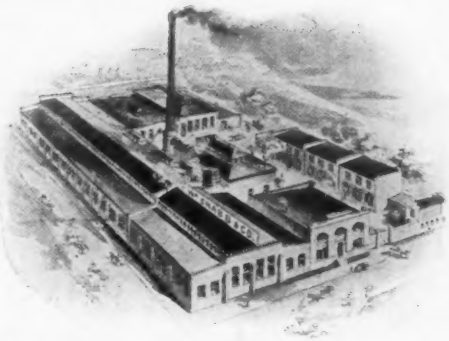
VENTILATES.

WRITE
A. HUN BERRY,

23 West First Street
BOSTON, MASS.

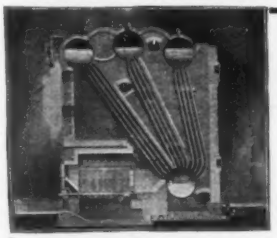
WILLIAM CRABB & CO.

Bagging Loom Reeds
Cotton Banding
Card Clothing in Leather
Card Clothing in Wood
Card Pins
Circles
Comber Needles
Comb Pins
Drawing Frame Pins
Fallers
Feed Rollers in Brass Shells
Gill Brass



Gills and Gill Bars
Hackles
Hackle Pins
Jennie Pins
Needle Pointed Pins
Picker Teeth
Porcupines
Rivets
Rotary Gills
Spreader Pins
Steel Springs
Steel Wire
Tentering Pins
Waste Machine Clothing and Teeth
Weavers' Combs

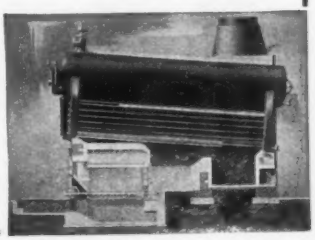
NEWARK, N. J.



The Murphy Automatic Smokeless Furnace

Burns Slack with Great Economy

The Murphy can be installed under any type of fire-tube or water-tube boiler and to units of any size.

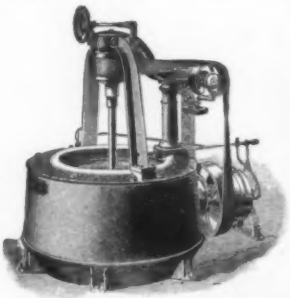


SETTING UNDER TWO TYPES OF BOILERS SHOWN HEREWITH

MURPHY IRON WORKS

DETROIT, MICH.

Hydro-Extractors, Exhaust Fans, Dye Tanks and Tubs

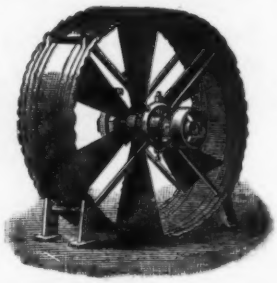


Adjusts itself to an uneven load, runs without vibration
Unusual capacity for high-class work

Bridger Hydraulic Cutting Press

Send for Catalog

Tolhurst Machine Works
Fulton St., and 6th Ave., Troy, N. Y.



Moves more air than any other fan made. Very efficient under widely varying conditions. Noiseless and does not obstruct the light

SCHAUM & UHLINGER, INC.

PHILADELPHIA

MANUFACTURERS OF

HYDRO EXTRACTORS

Electric, engine and belt driven

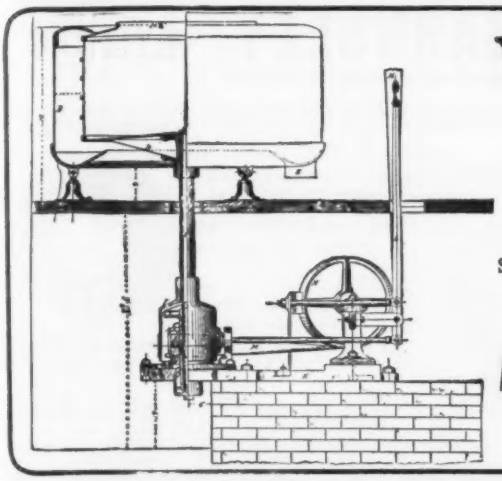
ASK FOR BOOK GIVING FULL PARTICULARS

K-A Electrical Warp Stop

IS ACTIVE AND UP TO DATE

SUBSTANTIAL EQUIPMENTS NOW IN PROCESS.
REPEAT ORDERS ARE ENDORSEMENTS OF MERIT.
COMPARISON WITH OTHER WARP STOPS INVITED.
K-A STANDS FOR CERTAINTY—SAFETY—SAVING.

K-A Dept. Mossberg Wrench Company
Central Falls, R. I.



Weston Hydro Extractors.

Special Machines for Acid Work.

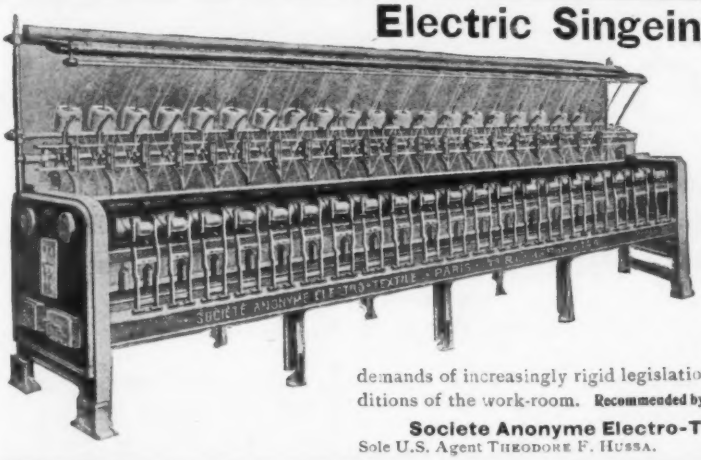
SHAFTING, PULLEYS,
FRICTION CLUTCHES, Etc.

American Tool and Machine Co.

Incorporated 1864. Founded 1845.

109 Beach Street, Boston, Mass.

Electric Singeing Machinery



for Cotton Yarns, Worsted, Silk, Schappe, etc.

We lower your cost of production from 30 to 60%.
We produce yarns of finer quality.
We produce yarns of better color.
We give you cleaner, safer work-rooms.
Simple to operate.
The only machine that allows manufacturers to meet the demands of increasingly rigid legislation controlling the health conditions of the work-room. Recommended by the Commissioners of Labor in France.

Societe Anonyme Electro-Textile, Paris, France.
Sole U.S. Agent THEODORE F. HUSSA. 135 Liberty St., New York City.

Electrical Installations

In Textile Mills is Our Specialty

15 Years Experience Highest References

MODERN LIGHTING SYSTEMS
EFFICIENT POWER PLANTS
RECONSTRUCTION OF OLD PLANTS

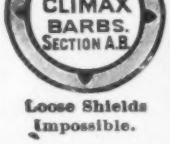
Watson-Flagg Engineering Company

Contracting Engineers

Paterson, N. J. **New York, N. Y.**

WILSON & CO., BARNSLEY, Limited

Absolutely secure combination of Shield and Bobbin guaranteed.



Loose Shields impossible.

BARNSLEY, ENGLAND.

Specialties: PATENT "LOCKFAST" and "CLIMAX" Shields. ENAMELLED CONDITIONING BOBBINS, Impervious to Steam, Moisture or Oil.

GOLD MEDAL St. Louis, 1904. DIPLOMA d'Honneur Liege, 1905 Highest Awards for Bobbins.

Added Strength and Absolute Security.

Samples and Prices on Application.

SPEED & STEPHENSON, Agents for U. S., 170 Summer St., Boston, Mass.

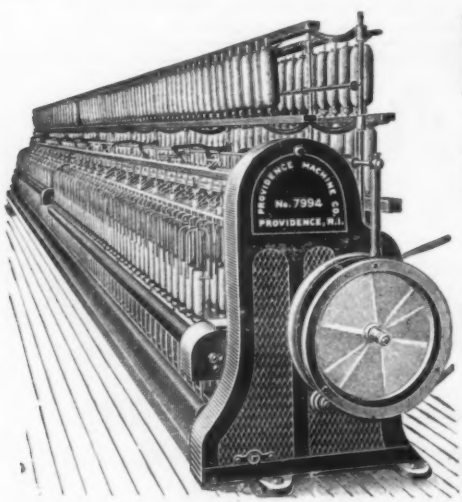
WILLIAM BODDEN & SON, Limited

The "BODDEN" Flyer

For QUALITY OF FINISH
For QUANTITY of PRODUCTION
HAS STOOD THE TEST OF YEARS

Sole Agents for U. S. A.

Thomas Mayor & Son, Olney Street, Providence, R. I.



Providence Machine Co.

Manufacturers of

Improved Cotton Roving Frames

Improved Worsted Roving Frames

564 Eddy St., - - PROVIDENCE, R. I.

Made by

Rodney Hunt Machine Co.

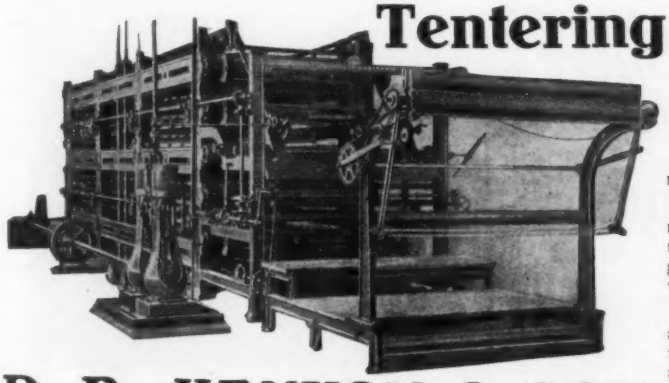
Boston Office, 70 Kilby St.

Works at Orange, Mass.

Send for Circulars

See Advt. of Water Turbines on page 236

Improved Fulling Mills Washers & Dyeing Machines



Tentering and Drying Machine

The cut represents one of our largest machines of the pipe system.

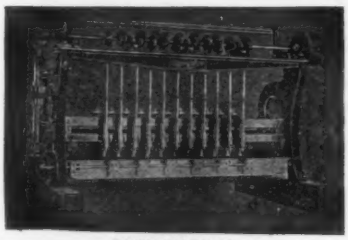
The wet goods in transit through the machine are thoroughly dried and tentered to the proper width. Although goods entering may be of various widths, all delivered are uniform.

The machine uses but a small amount of steam, and being substantially constructed, the repair bill is almost a negligent quantity.

It is equally efficient for heavy as well as light goods, either wide or narrow.

D. R. KENYON & SON

Raritan, New Jersey



50-IN. MACHINE

L. F. FALES

MANUFACTURER AND BUILDER OF

SEWING MACHINES

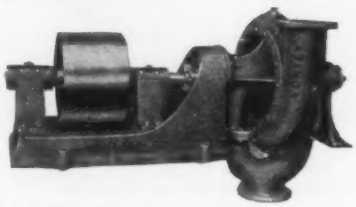
FOR ALL PURPOSES WHERE A NUMBER OF ROWS OF SEAMS ARE REQUIRED

BUILT WITH ANY REQUIRED NUMBER OF NEEDLES

DESIGNER OF SPECIAL MACHINERY

WALPOLE, MASS. U. S. A.

PAPER SLITTING MACHINES



Centrifugal Pumps

We build them in accordance with the most advanced practice for all requirements. Consult with us on any pumping proposition.

Lawrence Pump and Engine Company

P. O. Box 70. Lawrence, Mass.

Catalogue T. R. now ready.

TRADE-MARK VALUE

It is a safe principle that the impression made by a trade-mark on the mind of a purchaser will be about as clear as the representation of the brand on the commodity.

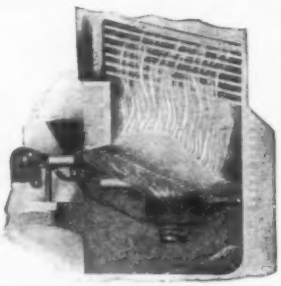
The Kaumagraph Process of Textile Stamping is the only scientific method of stamping *all* fabrics with absolutely uniform results. Write us for samples.

KAUMAGRAPH COMPANY
156 Fifth Avenue, New York

RESULTS COUNT

The Real Value of a furnace or stoker is measured by the completeness of combustion and cost of operation. The

TAYLOR STOKER



does 24 hours per day what a first-class fireman is capable of doing for short periods only. The operating expense of the stoker is much less and its overload capacity much greater.

American Ship Windlass Co.,
General Sales Office and Works
PROVIDENCE, R. I.

LENHER ENGINEERING CO.
Sole Agents, N.Y., N.J., Pa.
Singer Tower, New York City
15-9

½ H. P. Westinghouse Textile Motor Driving Spooler, 100 Spindles.

Count the belts eliminated by driving your spoolers individually with Westinghouse Motors

Then consider that you can locate them anywhere at all in your mill, in otherwise wasted corners, entirely independent of line shafts. Individual motor-driven spoolers are self-contained units that you can move about at will. They consume only just the power sufficient to operate them, in strong contrast with mechanical drive where line shafts consume more power than the driven spoolers.

"Textile-Motor Talks" No. 7 tells of other advantages; ask our nearest office to mail you a copy.

Westinghouse Electric & Mfg. Co.

Atlanta Charlotte Philadelphia
Boston New York and other large cities

We Challenge You

to find a bearing in your entire plant which Mica Flake Lubricant will not keep cool—or a hot bearing which Mica Flake Lubricant will not **cool while running!** Our challenge is contained in a **small package,** freely offered for demonstration purposes, of

MICA FLAKE LUBRICANT

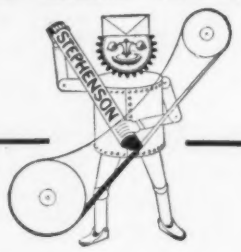
Do you accept our challenge? Send for the test sample! **Mica Flake Lubricant is radically different, in principal and performance,** from Graphite or any other lubricting material.

Keeps the metal bearing surfaces actually apart—reduces friction—cools hot journals—lengthens the life of your oil—saves costly delays and break-downs—increases operative efficiency.

Mica Flake Lubricant is **pure Mica—pure white**—will not discolor or damage fabrics. **Write for literature prices, and the test sample!**

THE UNITED STATES MICA COMPANY, 238-240 LaSalle St., Chicago, U. S. A.

"The After Effects Are Pleasant."



If Quality Counts

and ***Results*** are what you want, refuse to accept a cheap substitute, and insist that your Dealer gives you the kind of ***STEPHENSON Bar Belt Dressing*** that is made for your particular belts. Be sure the ***Man with the Cog-Wheel Face is on each Pound Stick.*** And don't confuse the Brands.

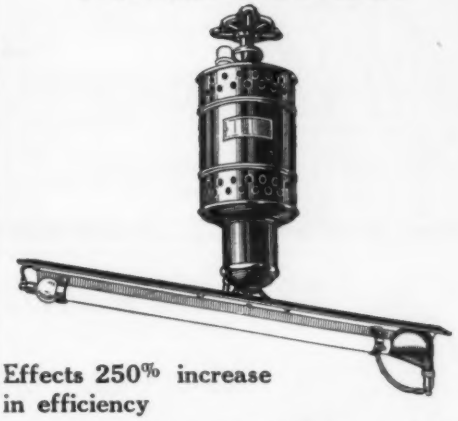
RED Label Brand for Leather Belts
GREEN Label Brand for Rubber Belts

Stephenson Mfg. Co., Albany, N.Y.

Write for sample of STEPHENSON Belt Cleaner.

Cooper Hewitt Lamps

FOR TEXTILE MILLS



Effects 250% increase in efficiency

In a certain plush factory the daylight rate of cloth inspection, formerly 40 yards per minute, was increased to 100 yards per minute by using Cooper Hewitt Lamps.

See Catalogue No. 60

COOPER HEWITT ELECTRIC CO.
220 West 29th St., New York.

WATER TOWERS
IRON OR STEEL

for Fire Protection and Domestic Service.

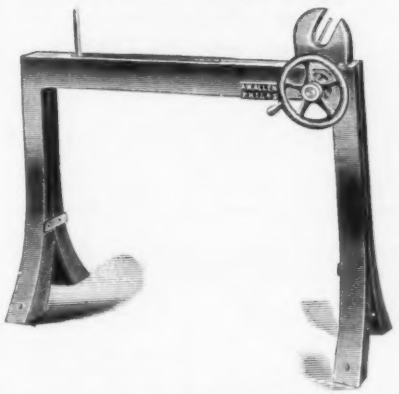
Built in all sizes.

Write for catalogue.

Plans and prices cheerfully given.

Tippett & Wood, Phillipsburg, New Jersey

Hank Twister
For Worsted Yarn



Are you twisting by hand? Machine sent on trial.

A. W. ALLEN
2427 Mascher St., Phila.

Established 1870

John Heathcote & Son

Providence, R. I.

Builders of Improved

Cloth Tentering and Drying Machinery

for WOOLENS, WORSTEDS, FELTS, etc.

Built Upright or Horizontal with Low Down Feed

Ventilating Fans a Specialty

Send for Catalogue

Key Seating Attachment

FOR

Whiton Gear Cutter

We offer an attachment for use with our Gear Cutting Machine, to cut key seats for the Woodruff System of Keying. Write for description, circulars and price.

THE D. E. WHITON MACHINE CO.,

19 Oak Street, New London, Conn.

Handles heavy cases in a Time-Saving Way—The Economy Steel Tiering Machine

Goods are put in place with ease and economy. The largest amount of stock can be stored in the smallest possible space and yet be instantly accessible. In use in representative mills. Investigate its merits and 'twill be in use in yours. Write for prices.

Economy Engineering Co. 58-64 N. Jefferson St. Chicago, Ill.

EXCELSIOR WOOL OIL COMPOUND and COTTON SOFTENER

It Pays to Buy Your Supplies from the Makers

The Excelsior Compounds are the best lubricating and softening products for wool, cotton, wool and cotton mixed. Eliminates the scouring process and effects large saving in time and soap. They will not gum in the cards.

Write for prices and particulars.

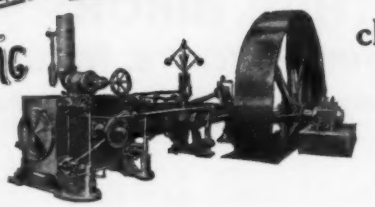
Burckhardt & Co.

Established 1841 CINCINNATI, O.

LARD OIL

Soap
Tallow
Emulcene
Wool Oils,
Etc.

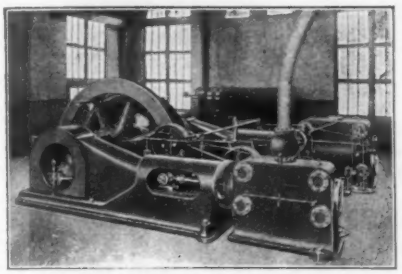
THE IMPROVED FISHKILL CORLISS ENGINE
BUILT BY THE FISHKILL LANDING MACHINE CO.,
FISHKILL ON HUDSON N.Y.



For all power purposes
where high economy and
close regulation is required.

Cylinders & Valve Chests rebored in place.

General engine repairs.



Rice & Sargent Corliss Engines
Heavy Duty Type
NOTED FOR
RELIABLE SERVICE,
LOW STEAM CONSUMPTION,
LOW FRICTION LOSSES and
SPEEDS HIGHER THAN OTHER CORLISS TYPES.
Designed and built by
PROVIDENCE ENGINEERING WORKS
Main Office & Works PROVIDENCE, R. I.

There are many articles advertised to do the work of
Carbolineum—but have you ever tried
AVENARIUS CARBOLINEUM
"It preserves wood against rot."
On the market since 1875.
Carbolineum Wood Preserving Co.
347 West Broadway, New York, N. Y.

THE PROOF OF THE PUDDING IS IN THE EATING.

The Best That Money Can Buy
SPINNING RINGS.
TWISTER RINGS.
RING HOLDERS.
TRAVELER CUPS.
SILK RINGS.
TRAVELER CLEANERS.
Correspondence Solicited.
WHITINSVILLE SPINNING RING CO.,
WHITINSVILLE, MASS., U. S. A.

BLEACHING
DYEING
FINISHING
MACHINERY

ARLINGTON MACHINE WORKS
ARTHUR BIRCH
ARLINGTON HEIGHTS, MASS.

CRABBING
OPENING
SEWING
MACHINES

C-W squirrel-cage induction motors make good in textile mills. So do **C-W** engineers. See Bulletin 105 Y.

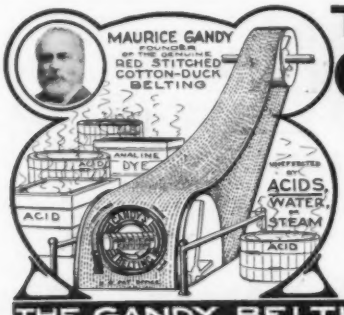
Crocker-Wheeler Company, Ampere, N. J.

1-4 to 250 H. P.

JACOB WALDER,
Paterson, N. J.

Sole Manufacturer in the United States of **Brass and Steel**
Liberal Discount to Dealers.

MAILS



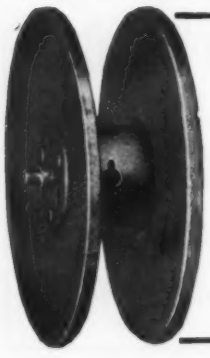
THE GENUINE GANDY

ANOTHER VICTORY.

On Nov. 18th, 1907, we secured a judgment against Weller Manufacturing Company for selling imitations. On Feb. 8th, 1909, Circuit Court of U. S., Western. Dist. of Pa., issued an injunction against C. A. Turner Inc., from infringing upon our rights.
GANDY TRADE MARKS are registered and will be protected, so don't be deceived. Every belt shows every ten feet "GENUINE GANDY BELT."

We also make Gandy Belt Dressing and issue a free Booklet, "Experiences with Gandy."

THE GANDY BELTING CO. BALTIMORE, MD.



STAMPED STEEL BEAMS
(Patented)

MADE WITH STEEL BARREL.

Great advantage over the old fashioned cast iron or wood.

Stamped Steel Beams are up-to-date.

FRANK MOSSBERG CO.

See our special Reel, Spool and Beam Catalog. **Attleboro, Mass.**

A. H. HOWARD, Pres. ESTABLISHED 1866. HERBERT MIDGLEY, Supt.

A practical test will convince you we can furnish the

BEST

COTTON, WOOLEN and WORSTED

CARD CLOTHING

Howard Bros. Mfg. Co.

144 and 146 Vine Street, WORCESTER, MASS.

You'll Get More Carding—
Have Better Yarn—
With Less Waste—

If You Use the Henderson Card

It gives greater strength and production than any other system.

James H. Whittle Co.

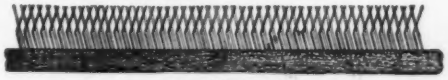
Successors to the Cleveland Machine Works

Owners and manufacturers of the celebrated *Henderson Card* for Wool, Worsted, Cotton, Waste, Flax and asbestos. Also manufacturers of

All Kinds of Woolen Machinery.

150 Harlow Street, - Worcester, Mass.

Bates & Robinson



Patented Dec. 1908

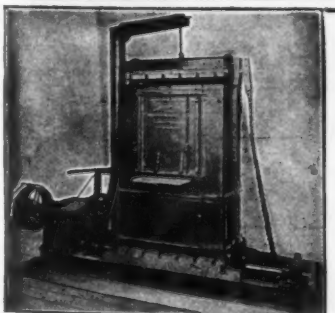
Combination Card Clothing

Which makes workers out of the strippers.

Thousands of these combination strippers running in the best mills in America.

Bates & Robinson Machine Co.

148 Warren Street, LOWELL, MASS.



Our Latest Improved Steel Power Press with New Steel Link Chains

Minnich Baling Press

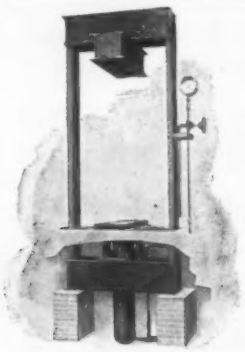
for all kinds of products.

Must turn out more bales with less labor and power than any press in the market.

Send for circular.

Minnich Machine Works,

Lancaster Co. Landisville, Pa.



"FOR YOUR PRESSING NEEDS"

COLD WATER SHRINKING AND A

HYDRAULIC PRESS

WILL IMPROVE THE FINISH, GIVE A MOST DESIRABLE HANDLE AND PRESERVE THE LIFE OF YOUR FABRIC. COSTS LESS THAN ANY OTHER METHOD.

WHY NOT INVESTIGATE?

AUTOMATIC SHRINKING, HANGING AND DRYING EQUIPMENT.
HYDRAULIC PRESSES FOR ALL PURPOSES.

NEW YORK, 39-41 CORTLANDT ST.
CHICAGO, 1200 MICHIGAN AVE.
BUFFALO, 31 CHURCH ST.

THE HYDRAULIC PRESS MFG. CO.
46 LINCOLN AVE., MOUNT GILEAD, OHIO.

New Bedford Textile School

Day and Evening Instruction in

Picking,
Carding,
Combing,
Spinning,
Warp Preparation,
Weaving,
Designing,
Knitting,
Chemistry
and Dyeing.

CATALOGUE ON APPLICATION.

Address

New Bedford Textile School
New Bedford, Mass.

Philadelphia Textile School

TWENTY-FOURTH YEAR

Oldest in America
Most Complete in the World

Endorsed by the Leading Educators and Manufacturers

Cotton, Wool, Worsted and Silk

Instruction given in Designing, Weaving, Carding, Spinning, Chemistry, Dyeing and Finishing

Special Courses in Textile Chemistry and Dyeing

For illustrated Year Book and other information, address

E. W. France, Director,

Broad and Pine Streets - - - - - Philadelphia

JAMES H. CLARKE GEORGE B. COCKER

COCKER MACHINERY COMPANY

Improved Warping and Beaming Machinery

of all types for Cotton Textiles.

Improved Double Acting Nappers and Felters

For Cotton and Woolen Goods.

Frankford, Penna.

JAMES SPEED HARRY STEPHENSON

Speed & Stephenson

Worsted Machinery

170 Summer Street, - - Boston, Mass.

SOLE SELLING AGENTS FOR

Improved Noble Combs

Built by JAMES SMITH & SON, Worcester, Mass.

Also representing leading European Manufacturers for all kinds of Worsted Machinery and Supplies.

Change Gears and Parts for above Machinery kept in stock and a general line of Mill Supplies. Second hand Woolen and Worsted Machinery always on hand.

SPECIALTY—Worsted Machinery repaired and rebuilt with the latest improvements or altered as desired. Mill and Machinery Valuers.

Machine Shop, Farley St., So. Lawrence, Mass.

"The Chemistry AND Practice of Sizing"

BY

PERCY BEAN, F.C.S., M.Ph.S.,

Expert on Sizing, Dyeing and Finishing. (Author of "The Chemistry and Practice of Finishing")

AND

F. SCARISBRICK,

President of the Blackburn and District Manager's Association, Silver Medallist for Manufacturer, City and Guilds, London.

The first edition of this work was published in January, 1903 and was immediately followed by an edition specially printed for India. These two editions were sold out within twelve months of publication, the demand in England being such that no copies were sent to the United States for sale and but very few have since found their way here.

The most complete and exhaustive work on this subject ever published.

The authors of this book have exceptional qualifications for the work. The present edition has been completely rewritten and brought up-to-date, necessitating the addition of about 200 pages.

Full descriptive circular sent free on request.

The size of the book is 6 x 9, 586 pages, 53 illustrations, 10 plates.

We are the American Agents.

Price, Express Prepaid, $10.00.

LORD & NAGLE COMPANY,

144 Congress Street, BOSTON, MASS.

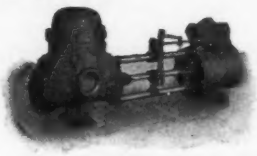
DEAN BROS. STEAM PUMP WORKS

INDIANAPOLIS, IND.

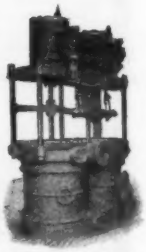
DUPLEX PUMPS, SIMPLE PUMPS
ATLANTIC BOILER FEEDERS
JET AND SURFACE **CONDENSERS** ELECTRIC PUMPS BELTED PUMPS, Etc.

VERTICAL AIR PUMP AND JET CONDENSER

DUPLEX DURABLE PUMP



SIMPLE PUMP



TWIN AIR PUMP AND CONDENSER

OIL-STEAMPROOF "Aqua" WATERPROOF

Use Aqua Waterproof Belting

"AQUA" *Water-Proof Belting* is water-proof, steam-proof, and acid-fume-proof. In addition, it has the pliability, wearing and lasting qualities of good Leather belting. Our patent process of mineral tannage makes the leather impervious to water and weak acids but retains the original strength and pliability of the rawhide.

You will find an "AQUA" Belt will transmit more power, last longer, and give less trouble than any canvass, rubber, or oak-tanned belt stuffed with water-proof compounds.

Write for Circular No. 6.

THE SHULTZ BELTING COMPANY

ST. LOUIS, MO.

New York Philadelphia Boston

Drives at a Right Angle

without noise, dirt or trouble.

Almond Rt. Angle Transmission

eliminates mule pulley stand and bevel gear troubles.

T. R. ALMOND MFG. CO.,
Ashburnham, Mass.
New York Office, 40 Murray Street

TEXTILE Mill Lubrication

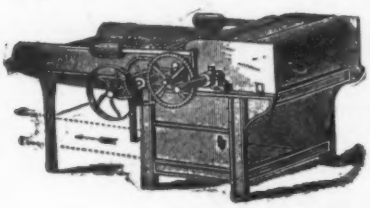
Dixon's Flake Graphite offers economical, cleanly lubrication. It will not stain the most delicate fabric. Get free sample "120-C."

Joseph Dixon Crucible Co.
Jersey City, N. J.

D X N TRADE MARK

Geo. W. Gerry & Son, ATHOL, MASS.

MANUFACTURERS OF



Lumpers,

Wool and Waste Dusters, Rag Dusters, Nappers.

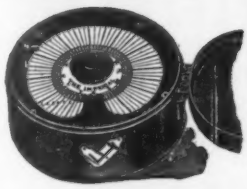
Improved Cloth Measuring Machines.

Lumper and Duster Cylinders Refilled and Repaired.

Dr. CHAS. F. McKENNA, Hudson Terminal, 50 Church St., New York City

Consulting Chemist and Chemical Engineer

Materials a Specialty. Processes—Economies—Inspection.



WATCH YOUR WATCHMAN

The Nanz Imperial Watchman's Clock

Compels your watchman to do his duty. This clock will reduce your insurance rate. No complicated mechanism. Absolutely reliable. Full particulars.

T. NANZ CLOCK CO., - - 178 Fulton Street, New York.

SAVE Their Cost In Freight.

THE CHAFFEE PATENT CLOTH BOARD,
Made of paper and wood,
Needs no covers,
Will not split or warp;
Not liable to break.
BOX SHOOKS and CLOTH BOARDS.

MFG. BY CHAFFEE BROTHERS COMPANY, OXFORD, MASS.

Clean LIGHT Strong

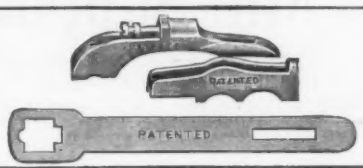
FOSTER SUPERHEATERS

Installed in any type of boiler without change in setting. Uniform superheat guaranteed.

Power Specialty Company,

BOSTON: 10 Post Office Square. **NEW YORK: 111 Broadway.**

DIXON PATENT STIRRUP ADJUSTING SADDLE
1,200,000 pairs now in use
Best Saddle for Top Rolls of Spinning Frames
Send for Samples
DIXON LUBRICATING SADDLE CO., Bristol, R. I.
Manufacturers of all kinds of Saddles, Stirrups and Levers

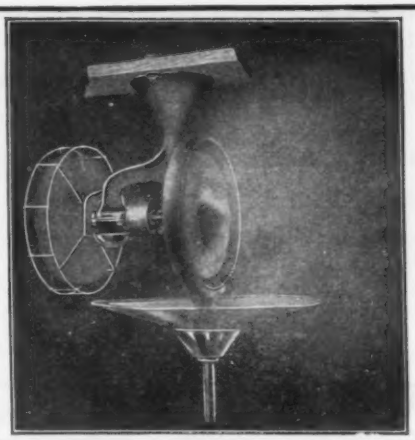


Telephone 989-3. W. U. Code Word—Adamsal

A. L. ADAMS,
MANUFACTURER OF PATENTED
CORSET AND FABRIC MACHINERY.
Strip Cutting, Folding and Winding Machines, Plain or Bias, 300 to 2400 Yards a Minute.

I personally, have introduced and taught people to do bias on my machines in seven countries. I furnish a complete equipment for cutting straight or bias fabric, and folding same.
Automatic Strip Cutting, Folding and Winding Machines in three variations. Universal Folding, Winding and Spooling Machines in three variations. 40-inch Winding and Cutting Machines. All of the seven machines for straight or bias fabric.
These machines pay for themselves in a short time. Any kind of a folder for any kind of fabric, bias or straight, 1-8 to 6 inch.
151 MIDDLE STREET, BRIDGEPORT, CONN.

The Textile World Record carries more advertising than any other similar medium because it has more subscribers of the kind that can buy or influence the buying of textile machinery and supplies. Because of this it gets still more subscribers, many of whom are attracted by the advertising as well as the editorial matter—for both are helpful to men engaged in textile industries.



Belt Driven **Hygrosso** Motor Driven

The Simpliest Humidifier Made

Four consecutive orders, furnishing equipment for five complete installations to one of the largest print goods manufacturers in the world, since January, 1909.

Merit Wins

John W. Fries

45 Lafayette St., New York

L. E. BARNES, Pres. and Treas.

The E. E. Burnham Co.

252 Lowell St., Lawrence, Mass.

Manufacturers of

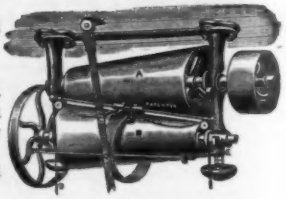
Leather Belting
Cotton and Worsted Roll Coverers

General Mill Supplies

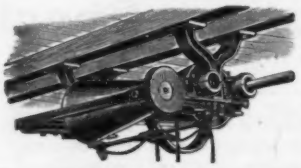
85% Pure Magnesia Steam Pipe and Boiler Covering

Variable Speed Countershafts

The Evans Friction Cone Pulleys



will drive your machines at any desired speed from 1 to 6 by simply pulling a cord. They are guaranteed to do your work.



We'll furnish them for either floor or hanging use. Over Ten Thousand Sets in Operation in this Country and Europe. Send for Catalogue.

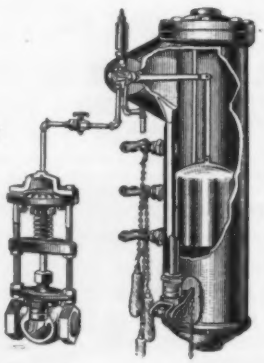
EVANS FRICTION CONE COMPANY
G. Frank Evans. - Newton Center, Mass.

The

Berry

Safety Automatic Feed Water

Regulator



New England Office: 103 Bedford St., Boston, Mass.

Berry Engineering Co., Chester, Pa.

BIRCH BROS.

Somerville, Mass.

"Coronation"

Piece End Sewing Machines

Sews any Fabric

Thick or Thin Wet or Dry Without Change Fine Stitch or Coarse Stitch

on American stand sent on trial most anywhere.

Send for Circular.

Bleaching, Dyeing and Finishing Machinery.

The Metallic Drawing Roll Co.

INDIAN ORCHARD, MASS.

MANUFACTURERS OF

Metallic Rolls

Especially adapted for Cotton Mills. 25 to 33 per cent more Production Guaranteed. Weight Reduced 33 to 50 per cent. No Leather Covering Bill.

WRITE FOR PARTICULARS.

FRANK B. KENNEY, Manager.

T. C. Entwistle Company

LOWELL, MASS.

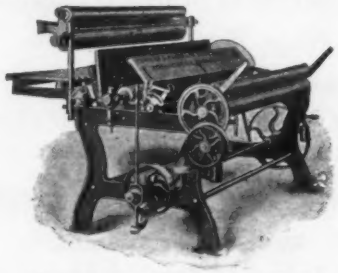
Warpers,
Ballers,
Beamers,

And PATENT EXPANSION COMBS For Warpers, Beamers and Slashers.

STUART W. CRAMER, Southern Agent, Charlotte, N. C., and Atlanta, Ga.

WOOL BURRING and PICKING MACHINERY

CLOTH FINISHING MACHINERY



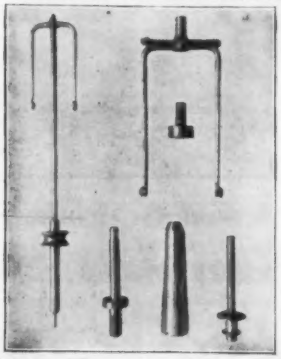
DEWING OR SPRAYING MACHINE

Curtis & Marble Mch. Co.

WORCESTER, MASS.

Geo. W. Womelsdorf Frank T. Calder

Calder Machine Works



We Manufacture

Spindles
Flyers
Caps
Tubes

and all parts for Worsted and Silk Spinning.

Spindles and Flyers of every description promptly repaired.

325 Race St., Phila., Pa.

Our Automatic

Roving Can Spring

Made of fine quality spring wire adjusted to the same tension. The plate or follower is made of IXXX tin plate with rounded edges, avoiding all wear on the sides of the can. A half inch hole in the center of the plate prevents suction. The spring for satisfactory service.

Write for prices.

James Hill Mfg. Co.,

Providence, R. I.

Millions of

$ $ $ $ $

Saved by

"The Master"

Portable Factory Sewing Machine—in labor and material, both wet and dry sewing, since 1870. That's why it leads in sales. Send for booklet

"Modern Money Saving Machinery"

Tillinghast Machine and Supply Co.

238 Aborn St.

Providence, - R. I.

THE PERFECT
OLIVE OIL SUBSTITUTE
BROSCO OIL
At one-third the cost, it gives results, equal if not superior, to those obtained from Olive Oil.
SCHOLLER BROS. CO..
3301 Amber St., Phila., Pa.
High Grade Soaps and Softeners.

CARDER'S TOOLS
LEWIS' PATENT CARD CLAMPS.

Gardner & Reid's Card Tooth Raiser
For setting up Bent Teeth of Card Clothing. Also a variety of other tools used by Carders and Manufacturers. Send for circular.
WM. H. BROWN CO. No. 81 Mechanic Street WORCESTER, MASS.

Edward Jefferson & Brother,
SOLE AGENTS FOR
The Textile Machinery Association Ltd.
Leeds, England
MAKERS OF ALL CLASSES OF
Worsted Machinery
127 South Second St., Philadelphia, Pa.

TEXTILE MACHINERY CO.

DUNN FLYER
60 INDIA ST.
BOSTON · · MASS.

COPPER Printing Rollers Singe Plates and Sheets
Taunton-New Bedford Copper Co.
New Bedford, Mass.
Our Guarantee:
Superior Quality. *Prompt Shipments.*

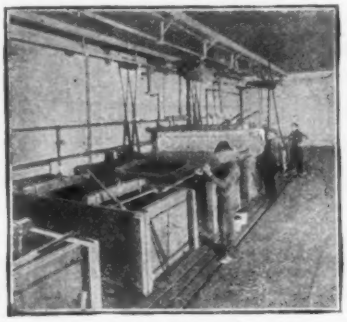
Robert G. Pratt
Worcester, Mass.
Battens and Supplies

Narrow Fabric Looms
for

KILBURN, LINCOLN & CO.,
FALL RIVER, MASS.
MAKERS OF
LOOMS
For PLAIN and FANCY WEAVING.
Represented in the South by
O. A. ROBBINS, - - - CHARLOTTE, N. C.

Waters' Dyeing Machine

This cut shows a new and useful machine patented by D. F. Waters for the dyeing of any color on Worsted, Woolen, Cotton and Merino Yarns.



Being successfully operated by some of the largest manufacturers in the country.
The saving of labor will more than pay for a machine in a few months.
Capacity; 2,000 lbs. a day per man.
Machine can be seen in operation at any time at my plant where I have 13 in operation all the time.

D. F. WATERS,
54 and 55 Wister St., GERMANTOWN,
PHILADELPHIA, PA.

R. H. HOOD COMPANY

Manufacturers of

Oak Tanned Belting

and

Worsted Aprons

General Mill Furnishers

1842-46 Germantown Ave., PHILADELPHIA, PA.

WILLIAM SCHOFIELD CO.

Krams Ave., formerly Church St., Manayunk, Phila., Pa.

Textile Machinery

Makers of Rag, Wool, Hair and Finishing Pickers, Automatic Square and Cone Willows, "Schofield" Intermediate Feed for Cards, Rag and Extract Dusters, Waste Pullers, Worsted and Shoddy Reels, All Kinds of Spike and Slat Aprons.

Special Machinery Built. General Machinery Repairs.

Relagging Picker Cylinders a Specialty.

BELTED—STEAM—ELECTRIC

Hundreds in Service **HYDRO** Write for Circulars

EXTRACTORS

—THE KIND FOR HARD SERVICE—

DIENELT & EISENHARDT, Inc.

Howard and Thompson Sts.

PHILADELPHIA

Gilbert Wood Split Pulleys

SAGINAW MANUFACTURING COMPANY,

SAGINAW, MICH., U.S.A.

New York Branch, 88 Warren St.,
Chicago Branch, 28-32 So. Canal St.
Sales Agencies in all the Principal Cities.
Cable Address: Engrave. A B C and Lieber's Codes.

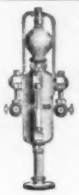
ELIAS T. VANDEGRIFT

Successor to Ward & Vandegrift

In the Manufacturing of **SPINDLES,**

For Cotton, Woolen, Worsted, Silk and Flax Machinery. Manufacturers and Repairers. Also Flyers, Steel Caps, Bolsters, Steps, Tubes, Etc.

ELMER, SALEM CO., .. N. J.



"Detroit" On a Sight Feed Lubricator Means "Best Obtainable"

That's why they are found wherever steam power is used—that's why more are bought than of all other makes combined—over 1,000,000 already sold.

Send postal for catalog.

DETROIT LUBRICATOR COMPANY,

DETROIT, U.S.A.

JOHN E. KENDRICK, President. MYRON FISH, Treasurer. M. C FISH, Secretary

American Supply Co.

Manufacturers of Reeds, Harness, Belting and General Mill Supplies

We make a specialty of Harness for American Warp Drawing-in Machine

OFFICE and STORE—135-137 Washington St., Providence, R.I. FACTORIES—Central Falls, R.I., and Fall River, Mass.

Spindles
Flyers
Repairs
of all kinds

F. A. & P. HALL,

DOUBLING and SPOOLING MACHINES

LAWRENCE, MASS.

Caps
Tubes
Spinning
Machinery
Parts

Thread and Silk **SPOOLS** of any description

made from one piece, up to 6" long and 3" dia.

We are located in the best white birch region. Our work and prices seem to satisfy the most particular customers. We can give any finish desired. Estimates furnished on samples submitted.

E. L. TEBBETS SPOOL COMPANY, Locke's Mills, Me.

Steel Heddle Manufacturing Co.

2110-18 W. Allegheny Ave, Phila., Pa. Manufacturers of

STEEL HARNESS and FRAMES

Sole Selling Agents { For England, Ireland, Etc., Thomas E. Power & Co., Bradford, England
For Japan and China, Shewan Tomes & Co., 10-12 Broadway, N.Y. City

REVOLVING FLAT CARD BRUSHES

S. A. Felton & Son Co. FOR USE ON ALL MAKES OF REVOLVING FLAT CARDS Manchester, N.H.

ASHWORTH BROS.,

—MANUFACTURERS OF—

Card Clothing of Every Description

FALL RIVER, MASS.

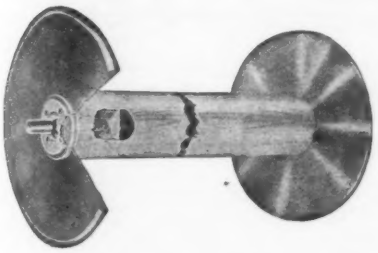
Shaw's "Victor" Travelers

Manufactured by

VICTOR SHAW RING TRAVELER CO.

Incorporated 1899.

23 Sabin Street, PROVIDENCE, R. I.



S. & D. Jack Spool

Pat. Aug. 6th, 1906

SWEET & DOYLE, Mill Furnishers

COHOES, N. Y.

The only spool made that the barrel itself acts as a support for the head. Note the recess in the head and the shoulder on the barrel. Our Claim:— A perfectly SMOOTH HEAD.—NO SLIVERS.— A STIFF SPOOL.—The STRONGEST.—The LONGEST LIVED.—As CHEAP as the BEST.— Practically INDESTRUCTABLE.

Established 1844.

BENJ. BUCKLEY'S SON,

(WM. J. BUCKLEY) *Gun Mill, Paterson, N. J.*

Manufacturer of all kinds of SPINDLES, FLYERS, RINGS, TUBES, CAPS, etc., for Cotton, Silk, Flax, Woolen and Worsted Machinery.

Roving Spindles and Flyers a Specialty. Light Forgings.

REPAIRING OF ALL KINDS.

SILK MILL SUPPLIES

OF EVERY KIND AND DESCRIPTION

Also Power Transmission Supplies for General Mill Use.

I. A. HALL & CO.
Paterson, N. J.

Allentown Reed, Harness and Mill Supply Co., Allentown, Pa.

Incorporated 1903

J. S. TURNER MFG. CO.

J. S. Turner, Treasurer and Manager

Post Office Box 1072. Telephone 1062. 545-547 Broadway, Lowell, Mass.

OAK TANNED LEATHER BELTING

Worsted Rolls of all kinds Covered and Bossed entirely new. We make the best LUG STRAP ever put on a loom. Comb and Machine Brushes. Belt and Iron Cements of all kinds. Mill Supplies of all kinds. Agents for the Natl. Brake and Clutch Co.'s Cork Inserts. **Leather Aprons. Turner's Patent Worsted Roll Covering Machine.** Why not try Turner's "Hold Tight" Iron Cement for Roll and Pulley Covering?

The Olympia Cotton Mills Co. has used **two carloads** of

***The* STATESMAN 100% PURE PAINT**

and Mill-light Gloss Enamel. *Samples furnished.*

Charles H. Brown Paint Co., 188-190 Montague St., Brooklyn, N.Y.

A. G. THURSTON & SON,

MANUFACTURERS OF

Fluted Rolls, Pressers for Flyers

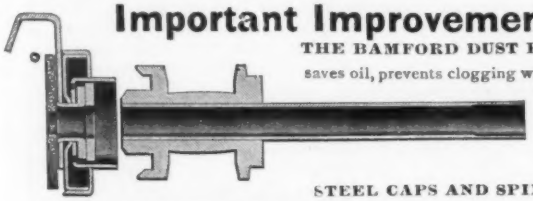
AND GENERAL MACHINERY

Specialties made of Renecking, Refluting, Filing and Honing of all kinds of Rolls. Flyers Repaired and Fitted with any desired style of Pressers, Spindles Straightened, Restepped and Retopped.

Box 528. FALL RIVER, MASS.

Important Improvement in Worsted Spinning.

THE BAMFORD DUST PROOF and SELF-LUBRICATING SPINDLE TUBE



saves oil, prevents clogging with dust and lint, thereby insuring longer life to the tubes, saves labor, maintains uniform speed, **and most important of all,** makes PERFECT YARN. Refer to largest worsted mills.

BAMFORD & SMITH, Providence, R. I.

ALSO MFRS. OF

STEEL CAPS AND SPINDLES. Caps, Flyers, Tubes, etc., Repaired.

DOBBIN'S ELECTRIC SOAP, ABSOLUTELY PURE AND UNIFORM.

Dobbins' Hard Water Soap, a Specific for Hard Water or Water Charged with Chemicals.

AMMONIATED POTASH SALTS FOR SCOURING.

Dobbins' Palm Oil Fulling Soap. Dobbins' "Fast Black" Soap. Pure Olive Oil Potash Soaps.

FREE SAMPLE SENT FOR TRIAL ON REQUEST.

DOBBINS SOAP MANUFACTURING CO., 119 SOUTH FOURTH STREET, PHILADELPHIA, PENN.

BADISCHE COMPANY

ADOLF KUTTROFF, - - President
CARL PICKHARDT, 1st Vice-President
M. R. POUCHER,
H. L. WALDO, } - Vice-Presidents
GEO M. SNOW,
R. REICHARD, - - - - Treasurer
FR. KUTTROFF, - - - Secretary

Sole importers of the products manufactured by

BADISCHE ANILIN & SODA FABRIK,
Ludwigshafen a/Rhein, Germany.

Formerly sold in the U. S. by

KUTTROFF, PICKHARDT & CO.,

and latterly by

CONTINENTAL COLOR AND CHEMICAL CO.

128 DUANE STREET - NEW YORK

BRANCH OFFICES:

Boston - - 86 Federal Street
Providence - 80 So. Water Street
Philadelphia - - 238 Arch Street
Chicago - . 228 Randolph Street
Montreal - - 6 Lemoine Street

COPYRIGHT 1909 LORD & NAGLE COMPANY. REG. U. S. PAT. OFF

TEXTILE WORLD RECORD

Published on the 12th of each month by

LORD & NAGLE COMPANY

FRANK L. NAGLE, President. HENRY G. LORD, Treasurer.

SAMUEL S. DALE, Editor.

Publication and Editorial Office

144 Congress Street, Boston.

119 South 4th Street, Philadelphia. 123 Liberty Street, New York.
463 East 42nd Street, Chicago.

Entered at the Boston Post Office as Second Class Mail Matter.

Subscription Rates.

Textile World Record in United States and Mexico	$2.00 per year
To **Canada**, on account of extra postage	$2.50 per year
To other **Foreign Countries** (postage paid)	$3.00 per year
Textile World Record and the **Official American Textile Directory**, (Traveler's Edition),	$3.00 per year
To **Foreign Countries** with Directory (postage paid)	$4.00 per year
Dyer's Supplement	$1.00 per year

Remit by Express Order, Postal Money Order, Cheque or Registered Letter to Boston Office.

Copy for regular advertisements must reach publication office by the 25th of month preceding date of issue to insure proper attention. Transient ads., Wants, For Sale, etc., to go on Classified pages can be taken up to the 4th of the month of publication. We are always pleased to co-operate with advertisers in preparing attractive advertisements, and strongly recommend frequent change of copy, which increases the interest, and, therefore, the beneficial results of the advertising. We will cheerfully change copy as often as may be desired, providing it reaches us in time, but we cannot promise changes for next issue unless received as above stated.

Advertising rates on application.

Official American Textile Directory

Published annually, in two editions. Office, Large Size, **$3.00. Travelers'**, Flexible, Smaller, **$2.00.**

A Complete Directory of Cotton, Woolen, Knitting, Silk, Flax and Jute Mills of the United States, Canada and Mexico, together with the Dyeing and Finishing Works, Bleacheries, Print Works and other Textile Establishments; about 7,000 in all. Full information is given about each mill in almost every instance, viz., the name of the company or firm, names of officers, agent, superintendent, the character of goods made, the machinery equipment, i. e., the number of sets of cards (or combs), the number of spindles, number of looms; whether the mill uses steam or water power, whether there is a dye house or not, the names of the selling agents or if the mill sells direct. All this and much other information contained in this book is arranged in a way to be instantly accessible.

American Directory of the Knitting Trade.

Published Annually in a handy size for the pocket, $1.50.

It contains **full reports of every knitting mill** in the United States and Canada, giving capitalization, names of the officers, including superintendent and buyer; kind of goods made; number of knitting machines, whether latch or spring needle; number of sewing machines; whether the mill dyes or bleaches or finishes; kind of power; number employed; selling agent; kind of yarn bought; lists of the jobbers, manufacturers' selling agents, commission merchants, department stores and large retailers handling knit goods and the name of the person in charge of the knit goods department. List of dyers, bleachers, finishers, printers, etc., making a specialty of knit goods work. Special copyrighted maps of the mill districts, showing the cities and towns where there are knitting mills. It is indexed so any town or mill may be quickly found.

D and M

Gum Tragasol

Is The Best Warp Sizing Product

It is a natural gum of absolutely neutral qualities and readily mixes with starches and other sizing ingredients. It is not a compound. It is practically indestructible after drying, making it exceptionally valuable in cloths for grey shipment, or those stocked for final distribution, as it preserves that full, open, clothy feel, which is so desired.

D & M Gum Tragasol reduces warp breakage and eliminates lint from weave rooms. With it in use slashers can be speeded up 10%, and you can get 98% of the possible production.

A fair test will prove there is nothing on the market to equal it. Will you test it?

Our Other Specialties Are

D=M Bleaching Assistant and D=M Egyptian Tint

Danker & Marston

Boston, Mass.

Table of Contents for July.

PAGE

Monthly Comment 63
The Revision of the Textile Tariff 68
The New Army Cotton Uniform Cloth 69
Seasonable Fabrics 73
The Testing of Textile Material 75
Contracts in the Textile Trades 81
The Scaife Lifter Motion 84
CORRESPONDENCE AND NOTES 88
Foreign Styles in Wool, Silk and Cotton Cloths—Estimating the Cost of Wool Goods—Silk Throwing—English Notes—A Steam Power Plant—A Loom Stop Motion—Draft as Applied to Cotton Yarn—Preparation Machinery—The Drafting of Worsted.
QUESTIONS AND ANSWERS 108
KNITTING DEPARTMENT 114
The Knit Goods Situation—Equipment for a Hosiery Mill—The Operation of a Braiding Plant—Full Automatic Sweater Machine—Knitting Mill News.
NEW MACHINERY AND PROCESSES 126
DYEING, BLEACHING, PRINTING, ETC. 132
MILL NEWS 141
PERSONALS 151
NEW PUBLICATIONS 154
INDUSTRIAL NOTES 155
RECENT TEXTILE PATENTS 164
WOOL MARKET 189
COTTON MARKET 191
YARN MARKET 193
RAG AND SHODDY MARKET 201
DYESTUFFS AND CHEMICALS 202

Correspondence.

We solicit correspondence on textile subjects. Articles accepted will be paid for. Name and address must always be given, not necessarily for publication. Subscribers are invited to make free use of our Questions and Answers Department; correspondence is strictly confidential.

HOWARD & BULLOUGH,

AMERICAN MACHINE COMPANY, LTD.

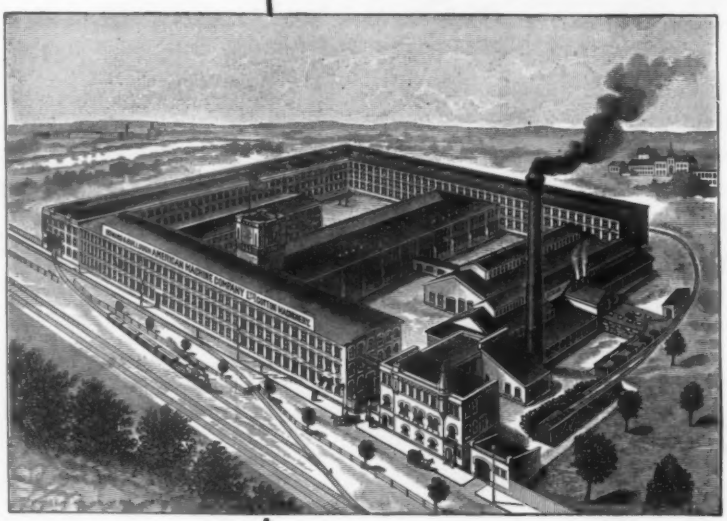
PAWTUCKET, R. I.

C. E. RILEY, Treas.
Boston Office, 65 Franklin St.

Southern Office
814-815 Empire Bldg., Atlanta, Ga.

COTTON MACHINERY

WE INVITE YOUR INVESTIGATION AND COMPARISON



Hopper Bale Openers
Feeders
Openers
Breaker Lappers
Intermediate and Finisher Lappers

Rev. Flat Cards
Drawing Frames
Slubbing Frames
Intermediate and Roving Frames

SEND FOR DESCRIPTIVE CIRCULARS WITH LISTS OF USERS.

NEW PATTERN SPINNING FRAMES
IMPROVED TWISTERS
For Wet or Dry Work

CONE WINDERS
WARPERS
SLASHERS

© July. 13, 09.
Cla. B, 194181
JUL 16 1909

TEXTILE WORLD RECORD

COMBINING

The Textile World and Textile Record.

VOL. 37 (NEW SERIES.) July, 1909 No. 4

Monthly Comment.

The Advance in Wool Goods.

The explanation of the recent advance in the prices of wool goods is found in the increased cost of wool and its by-products. That increase falls first on the wool manufacturer, who transfers it to the jobber and manufacturing clothier. These in turn call upon the retailer to reimburse them for the increased cost of cloths, and the retailer in turn transfers it to the consumer. This is the proper method of procedure. To expect either wool manufacturer, clothier or retailer to pay the increase in the cost of the raw material out of his own pocket is absurd. These elementary principles of trade should be remembered by those who are now pointing to the advance in prices as examples of extortion. The American Woolen Company is the principal target for such attacks because of the magnitude of its business, and is the object of a lot of loose talk about the tributes levied by trusts on the American consumer. One of the chief offenders in this respect is the New York World, which should know better. The American Woolen Company may or may not be entitled to the distinction of being called a trust. That, however, has no bearing on its recent advance of the prices of its products. That advance, which is of a very substantial character, varying from 12 1/2 to 35 per cent., is a necessity born of the increase in the cost of wool and wool by-products, a necessity that forces itself on not only that large corporation, but on every maker, no matter how small or how large, of wool goods in the country.

The advance is more pronounced and attracts more attention because of the wide and rapid fluctuations in raw material during the past eighteen months. A glance at our wool chart in this issue will make this evident to any intelligent person. Following that panic wool dropped to the lowest level reached since 1902. That decline carried the price of goods down also. Since the low prices for wool in 1908 there has been, first a rapid, and then a steady upward swing and now the wool manufacturers in the summer of 1909 have been called upon to open their lines of goods at advances from last year corresponding to the advance in the raw material. This brings the prices for the finished products on a parity with 1906 and early 1907. That is all there is to it.

The Indian Textile Industry.

A recent blue book issued by the British Government gives interesting particulars regarding the textile industry of India where the large supply of cheap labor makes Indian goods a danger for all other countries with higher wages and consequently higher cost of production. Following is an abstract of the report:

In 1883-4 there were 74 cotton mills, with a capital of five and a half millions sterling, 16,251 looms, and 1,895,284 spindles. In 1907-8 the cotton mills numbered 227, with a capital of thirteen

millions, 66,718 looms, and 5,763,710 spindles. The jute mills in the latter year numbered fifty, with a capital of seven millions, 27,244 looms, and 562,274 spindles. Although the last two years have been unfavorable, and some mills have worked short time or not at all, the industry has continued to develop. The production of yarns of counts above No. 25 has increased, and these finer yarns now constitute over 9 per cent. of the total. They are chiefly spun in the Bombay mills. Imports of yarn amount to only about 5 1/2 per cent. of the Indian production, but a very small proportion is of counts under 25.

Phenomenal profits were realized in the cotton industry in 1905-6. There was a decline in prosperity during 1906-7, which became accentuated in 1907-8. The output of the mills was restricted owing to poor crops and to the disorganization of trade with the Far East, especially China, which is the principal market for Indian yarn. In China trade was affected by famine, violent fluctuations in exchange, and Japanese competition. Some compensation was found in European markets, to which much larger shipments were made. There was also a large demand for yarn for weaving in Indian mills.

Owing to the vicissitudes of the spinning business increased attention has been devoted to weaving, which has been greatly extended. This movement has been favored by a strong internal demand of indigenous manufactures. Looms are increasing at a more rapid rate than spindles, and goods of finer quality are being produced. Weaving is concentrated to an even greater degree than spinning in the Bombay mills, which in 1907-8 produced about 85 per cent. of the total output of cloth in British India; the United Provinces contributed about 5 per cent., and the Central Provinces and Madras about 4 per cent. each. These goods are mainly unbleached grey fabrics. However, there is a decided tendency to increase the output of other and finer fabrics, this tendency being specially marked in Madras.

While the cotton mills are largely owned by Indians and are mainly situated in Western India, jute mills are nearly all concentrated in Bengal in the vicinity of Calcutta, and are mostly in the hands of Englishmen. The jute industry has enjoyed almost uninterrupted and increasingly rapid progress, the number of looms and spindles having doubled in the last decade. In 1907-8 the number of spindles increased by 7 1/2 per cent., and the number of looms by nearly 8 per cent. The year was a prosperous one for jute manufacturers, and exports increased considerably.

There is now considerable activity in the manufacture of jute in Germany and the United States, but the principal center outside India is Dundee. It is questionable how far there is actual competition between Dundee and Calcutta. The Calcutta mills are employed chiefly in coarse weaving, whereas those of Dundee are engaged in finer work, and their looms are adapted for a much wider range of cloth.

There were six woolen mills at work at the end of 1907, containing 820 looms and 28,868 spindles, and producing goods valued at about £230,000 for the year. The industry shows little sign of expansion. Although the demand for woolen goods in India is not very large, certain varieties can be produced more easily and cheaply by European mills.

Are There Cotton Looms Enough?

The strength of the cotton market, particularly in fine goods, has surprised many buyers and converters and some manufacturers. Some of the shrewd larger buyers and converters have been placing orders for 1910 delivery and it is not easy to find mills capable of making finer constructions that are not sold up for some months ahead.

Some of the conservatives shake their heads and complain of over production, when they read of the many new cloth mills projected, the numerous improvements and enlargements undertaken and yarn mills installing looms to meet the demands, but if they will consider the gradual change that has been taking place in the character of the goods most largely sold, that the larger converters are calling for finer constructions of cloth, and where 56 by 60s was an average sateen construction some years, the buyers now want 88 by 80s and upwards and in other fabrics a corresponding increase in the set of the warp and number of picks per inch, they will appreciate that it takes a great many more looms to produce the same number of yards of cloth.

The consumer is probably buying just as many yards as ever and the country is growing as rapidly as it has been in the past and when to this normal increase is added the demands for cloth of finer construction and greater number of picks per inch, it will be seen that the loom capacity must increase in far greater ratio than the number of yards sold. This change in the demands of buyers is undoubtedly permanent. The consumer seems able and willing to pay the increased price for the better made and more substantial fabric and no doubt this tendency is largely responsible for the firm market and steady demand for cotton cloth which has prevailed in the past year and seems likely to continue.

France imported into the Philippines during 1908 tulles and laces to the value of $15,213 against $12,140 during 1907.

Calculating the Cost of Woolens and Worsteds.

Nine years ago, to be exact in the January, 1900, issue of the Textile World, we published a description of a system of cost finding for woolen and worsted mills. That article has been republished twice by request, and we are confident that if the thirty-seven woolen and worsted manufacturers who recently participated in a cost figuring contest at New York had studied our system and applied its principle in their own mill practice their cost estimates would not have exhibited the astonishing variations that were reported in the press. In view of the vital importance of the question we present to our readers for the fourth time the description of the system of estimating cost and urge every textile manufacturer to study it until he understands it. This system embodies the correct principle of cost finding. The application of the method varies of course with the class of goods and method of manufacturing, but the underlying principle is the same in all cases.

Bradford Combing Sheds.

An observer in Bradford, Eng., has reported on conditions in the worsted combing sheds of that city to the Cotton Factory Times. First comes a reference to the physical condition of the wool combers:

There is nothing of the typical, brawny Yorkshireman about the woolcomber; he is probably the least stalwart of any of the sons of the county of broadacres. When a lad he may have been strong enough, but once the combing shed gets its grip upon him, he is doomed to a life of physical unfitness.

The working time, temperature of the work rooms and weekly wages make an undesirable combination:

There are thousands of woolcombers in Bradford, the women working by day, and the men by night. The men work at night in an atmosphere which varies from 90° to 110° of heat—90 is regarded as cool. The average wage, allowing for the ordinary condition of trade, is about 16s. per week. The men bring up (?) families on that! To get this magnificent wage the woolcomber has to work 60 hours, the majority starting at quarter past five in the afternoon and going on until six o'clock in the morning, with two stops of 20 minutes each during the night, the first at 20 minutes to 10, and the other at 20 minutes to two. The engine never stops, and when the man stops for his "chuck," he has to get his mate to look on for him. Most people have heard of the scanty attire of the women at their work.

As might be expected wool combers are as a rule short-lived and are forced to rely on charity for sustenance:

There is not a single woolcomber in receipt of an old age pension in Bradford, a striking commentary on the devastating effect the work has upon the lives of those employed in the trade. There are also more old woolcombers in the Bradford Workhouse than all other trades put together. The Corporation milk department supply more milk free, through the Cinderella Club, to woolcombers' wives and children than any other tradesmen's children. There are more woolcombers' children being fed (breakfasts and dinners) by the Education Authority under the Child Feeding Act by 50 per cent. than other trades children put together.

The work of a wool comber is not a skilled trade. It consists of tending machines that are largely automatic, and the amount of labor is small compared with the quantity of wool converted into tops and noils.

Profits in the German Cotton Industry.

The average dividend payment by fifty-two of the largest cotton manufacturing corporations of Germany was 10.8 per cent. in 1908, as compared with 13.3 per cent. in 1907. These fifty-two companies have an aggregate capital stock of m. 100,326,000. The earnings decrease in much greater proportion, but reserve funds enabled the dividend rate to be maintained at the figure given above. The companies engaged exclusively in weaving, show the largest reduction in dividend, the average rate for 1908 being 6.6 per cent., as compared with 11.8 per cent. in 1907. The corporations engaged in both spinning and weaving make the next best comparative showing with 10.9 per cent. in 1908 and 13.8 per cent. in 1907. The cotton spinning companies showed the smallest reduction, their average dividend rate for 1908 being 12.1 per cent., compared with 13.1 per cent. in 1907.

Brazil imported hosiery from Germany in 1907 to the amount of $239,220, as compared with $304,743 the year before.

To Build or Not to Build.

Whether to install worsted machinery in order that they may insure an adequate supply of worsted yarn for themselves, is a question that many manufacturers of men's wear have anxiously considered during the past year. With prices of worsted yarn soaring, and satisfactory deliveries difficult and sometimes with no supplies at all available, the weavers have been sorely tried.

A worsted yarn plant is an expensive undertaking and one to which a manufacturer may well give cautious and conservative consideration. A number of the larger cloth manufacturers, who are equipped with wool carding machinery, are installing worsted spinning machinery. There are several enormous sale yarn spinning mills under way and a number of smaller ones in process of construction. It is probable that the coming year will witness a larger actual increase in worsted yarn production than in any previous year and these new sources of supply are bound to have their effect in relieving the present overstrained and one-sided position of the worsted yarn market, although we do not look to see any overproduction in the near future.

The increasing demand for carded wool goods, so long neglected, must also be taken into consideration. In this country it has been the almost universal custom for the weavers of carded wool goods to spin their own yarn, while the weaver of worsted fabrics more generally buys from the custom worsted yarn spinner. From the nature of the processes, it is most advantageous for the manufacturer of wool goods to make his own yarn and there are not enough custom woolen yarn mills to supply the manufacturer equipped with looms alone, should the demand for carded wool goods require him to turn his attention to those fabrics.

Under these circumstances, it would seem that the manufacturer with looms and his own spinning machinery for carded yarn installed, may find conditions more favorable to him in the not far distant future than they have been in the past, even if he does not get fair treatment in the new tariff bill to which he is entitled.

1909-10 Official American Textile Directory.

The 1909-10 edition of the Official American Textile Directory is in bindery at the time this issue of the Textile World Record reaches its subscribers and will be published about August first.

As the shipment of several thousand books by express and mail requires a number of days and much clerical detail, the Directories cannot all be delivered at the same time, but every possible effort will be made to deliver copies as soon as possible to such as have ordered in advance or in combination with their subscription to the Textile World Record.

This is the fifteenth year of publication of this standard reference book and its increasing sales year by year demonstrate the satisfaction of the trade with its accuracy and completeness. A far larger number of copies of this Directory are sold than of any other similar publication. The method of arrangement is simple and less confusing than others, the map features are invaluable for handy reference and the various classified lists, yarn manufacturers, dyers, bleachers, print works, waste dealers, rag dealers, wool dealers, cotton dealers, manufacturers' selling agents, etc., contain everything in the way of directory information that is required by those in the textile trades.

Not the least valuable feature in the book is the Buyers' Index of machinery and mill supplies, containing the addresses of a large proportion of builders of textile machinery and mill equipment.

The main feature of the Directory is, of course, the complete report of all the mills in the United States, Canada and Mexico, showing the class of goods made, names of the officers, machinery capacity, selling agents, buyers, etc.

The book will be published in two editions as usual, the price of the office edition being $3.00 and the travelers' edition with flexible covers $2.00.

Protection in India.

The British government controls the tariff on imports into India, which accounts for their being low, the obvious object being to facilitate the entry of foreign, and particularly British, goods into that colony. Unable to place a protective tariff on the statute book the native population of India have resorted to the boycott of foreign goods and encouragement of Indian merchandise. This is called the Swadeshi movement, and its latest manifestation is the organization of a woolen mill with 2,500 spindles at Bombay, to be called the Standard Woolen Mills. The promoters intend to use native wool, of which there is said to be an abundant supply, and they are counting on the Swadeshi movement to aid them in displacing with their domesttic product, a portion of the large quantity of woolens now being imported.

Short Time in the European Cotton Mills.

Large stocks of cotton yarn in spinners' hands have brought the question of organized short time to the front in the European cotton trade. The Cotton Congress at Milan made short time an issue by the unanimous adoption of this resolution:

> Resolved, That, in view of the fact that in all countries the cotton industry is in a very depressed state, largely owing to over-production and the manipulation of the raw material, and that at the Paris Congress it was decided that when conditions similar to the present obtained the only remedy was organized short-time working, this Congress is of opinion that the International Committee should recommend the affiliated associations to take immediate steps for the commencement of organized short-time working.

On the return of the English delegation to Lancashire the need of short time was emphasized by C. W. Macara, president of the Cotton Federation, in an interview, from which this extract is taken:

> Then there is the Congress's unanimous recommendation to those engaged in the trade in all parts of the world to work short time with the object of dealing effectively with the prevailing depression, which is world-wide, and of restoring the industry to its normal condition. There never was a moment more opportune for carrying into effect the short time resolution which was adopted in Paris a year ago, and now strengthened in a remarkable way by the resolution passed in Milan. It is universally admitted that the present production of cotton goods greatly exceeds the present demand, and that the available supply of American cotton for the second half of the current cotton season is larger than it has been in any previous season. Notwithstanding these conditions, prices of American cotton are being forced up by manipulation to a point which is absolutely dangerous to the well-being of the industry everywhere. This evil short time alone can remove.
>
> The experience of the past has conclusively proved that the only effective method of dealing with over-production is short time. A slight margin in excess of requirements makes trade unprofitable; the adjustment of the balance between supply and demand makes it remunerative. The heavy losses which are being incurred at the present time are most prejudicial to the interests of both capital and labor.

The development of the plan for organized international short time, which is the main object of the Cotton Federation, is bringing up other and extremely difficult questions for solution. One is the need of a uniform international schedule of running time in order to make organized short time bear equally on the employers and operatives of the different countries. If the mills in one country run 65 hours a week and those of another 55 hours, it is obvious that the latter are on continuous short time and bear a disproportionate share of the burden when a general agreement to reduce the running time in a given proportion is enforced. This point is brought up by the Cotton Factory Times, which also expresses the opinion that another proper accompaniment to short time, whether national or international, is a system of compensating the operatives for the resulting loss of wages:

> Does it ever strike Mr. Macara and his friends that they might carry that mutual benefit idea even a little further than they yet seem to have done? Why should Continental employers be allowed to run their mills for 60 to 70 hours per week in normal times, while the mills in England work but 55 1/2 hours? Compared with the rest of the International Federation England may be considered on perpetual short time. Why, then, should not the Continental employers be asked to reduce their hours to the English standard as a first instalment of any short time movement? If that proved to be insufficient the hours could be reduced simultaneously in all countries afterwards. If the hours are only proportionately reduced England will still be bearing more than her share of the burden. It must be borne in mind, too, that the burden presses more heavily upon the shoulders of the operatives than those of the employ-

ers. It is high time that something was done in the way of compensating the workers for the losses they sustain when short time has to be worked for the benefit of the trade.

The Revision of the Textile Tarin.

Since our last issue tariff revision has consisted of talking and voting in the Senate. The talking on the textile tariff has related chiefly to the cotton and wool schedules. The voting on these and all other schedules has resulted in an almost unvarying monotony. With one or two unimportant exceptions, such as the rate on pineapples, the bill as reported by the Committee on Finance has been approved. At the present writing public attention has been temporarily diverted from the tariff by the action of President Taft in sending a special message to Congress, recommending an amendment to the Payne bill providing for a 2 per cent. on the net income of all corporations and that Congress provide for submitting to the States an amendment to the Constitution giving the government power to impose a tax on the income of individuals. Those who have vainly appealed to the President to urge Congress to grant their demands in the revision of the tariff schedules were quick to respond to the President's abandonment of his policy of non-interference in the revision of the tariff. Among these was the Carded Woolen Manufacturers' Association, whose directors promptly passed the following resolution, which was forwarded to the President, and at Senator Hale's request published in the proceedings of the Senate:

Whereas, The American carded woolen industry is seriously burdened by inequalities in the present tariff on wool and wool products, to such an extent as to threaten the existence of this industry; and

Whereas, The tariff bill as passed by the House of Representatives made negligible changes looking to a removal of these burdens, and the bill as approved by the vote of the Senate makes no changes at all; and

Whereas, The President of the United States has in a message to Congress urged the adoption of an amendment to the tariff bill providing for a tax on the income of corporations and not of individuals;

Therefore, The Carded Woolen Manufacturers' Association hereby requests the President to supplement his message to Congress with another recommendation that Congress adopt a thorough and honest amendment to Schedule K of the pending tariff bill, which will remove the present inequalities that now oppress the industry and the consumers of its products.

President Taft has given no sign of his attitude toward the Payne bill, which cannot become a law without his approval. The nearest approach to an announcement by him was in his address at the Yale commencement on June 30th:

Now, my dear friends, in suggesting differences among Democrats I am far from ignoring some difficulties that there are on our side. I remember in 1904 that Charles Francis Adams gave what I may call a perfectly good Adams reason for the election of the Democratic candidate over the Republican candidate. He said that one of the essentials of a successful free government was an able, patriotic and efficient opposition and that as the Democratic party had utterly failed in reaching that ideal, he was in favor of putting the Republican party in that place. Now I venture to say that while that may not be the reason which shall move the American people, it is true that if the Republican party does not live up to its promises and what the people expect of it, it will be relegated to a position like that of His Majesty's opposition. And, therefore, I may say by way of caveat that we have troubles of our own.

The New Haven statement is in itself but ordinary commonplace, and the attention it has attracted is the result of its coming from the lips of a man who is the sole arbiter of the fate of the Payne tariff bill. He can avoid neither the responsibility nor the consequences of his decision. He can and in all probability will ask advice, but in the end it is he alone who must decide. In that sense he is one of the most isolated of men although in the midst of the noisy strife over tariff revision. No course is more natural than for a man in such a position to keep his own counsel until he is called upon to act in the performance of his duty.

The Dingley tariff is being revised under a system of government designed to carry out the will of the people. And the degree to which that object of the government is attained depends on how well the people, the governing political party, Congress and the President do their duty. Revision began in the summer of 1908 when the Republican party did what it believed to be

its duty in pledging itself to tariff revision. Its candidate did his duty in explaining that plank and pledging himself personally that it should be carried out honestly and thoroughly or not at all. The people did what they believed was their duty when they elected a Republican Congress and President in November. Since then the House of Representatives did what seemed to be its duty in passing the bill as reported by the Committee on Ways and Means. At this writing the Senate is doing what a majority believe to be their duty in passing the bill as reported by the Committee on Finance. In due course the two Houses will meet in the conference committee to do their duty in finding common ground on which both can stand. And when the bill approved by both House and Senate reaches the President it will be time for him, wielding greater political power than any man, to do his duty.

The result will be an incident in the working of popular government. The success of our form of government depends upon how well the individual in private and public station does his duty. We will all rejoice if the result is good. If bad we may be reasonably sure that the responsibility will rest on those who fell short in doing their duty.

The debate on the textile schedules has consisted mainly of the speeches by the "progressive" Republican Senators. Senators Aldrich, Smoot and Lodge took a prominent part in defending the cotton schedule of the Committee on Finance. A noteworthy feature of the debate was the fact that practically the entire burden of defending Schedule K devolved on Senators Smoot of Utah, Carter of Montana, and Warren of Wyoming. Senator Aldrich made a brief speech, but with those exceptions the Senators who voted for Schedule K refrained from any attempt to defend or explain it.

The exports of merchandise from the United States for the eleven months ending May, 1908, aggregated in value $1,745,190,911, the largest in value in the history of the nation.

THE NEW ARMY COTTON UNIFORM CLOTH.

In the issue of August, 1908, and several subsequent issues of the Textile World Record, we criticised at some length the award of contracts for British khaki to be made into uniforms for the United States army service in the Philippines. It was claimed by the army officers in the Philippines that the English khaki was better suited to the tropics than American made fabric. We pointed out the fact that, admitting the preference of the soldiers and the suitability for tropical service of the lighter weight, more loosely constructed English fabric, it was impossible for American manufacturers or converters to produce a fabric with similar characteristics and at the same time conform to the Quarter Master General's specifications of 1908, which called for a heavier and firmer construction than the English fabric.

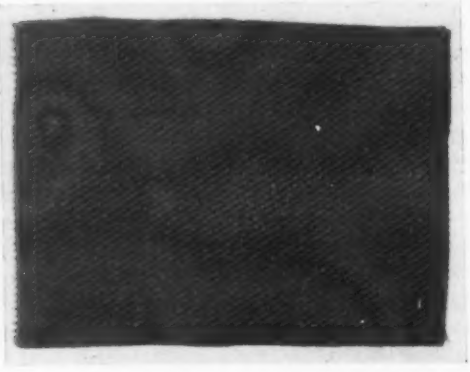
We analyzed samples of each and showed the unreasonableness of expecting any different results from such specifications and insisted that American manufacturers should have an opportunity of competing on even terms.

The department has recently informed us that previous attempts of army contractors to match the English samples in construction did not stand the tests for strength and color and that the specifications of 1908 were not adopted theoretically because the department desired a heavier "boardy" fabric, but because the only fabrics submitted by the army contractors which would give the nearest approach to serviceability required and stand the tests, were those similar to the specifications of last year. In other words, that the specifications were drawn to suit the best American fabrics which were submitted, rather than because the department considered the old specifications ideal.

We stated at that time, "if it is desired to extend the comparison of British and American military khaki to include the strength and fastness of color, no one will be more anxious to have a fair test of those qualities than ourselves."

Since those much criticised awards, the Quarter Master General's department has been striving to secure an American made fabric for tropical campaigning which was not only equal but much superior to the English goods or any other in these particulars.

When the olive drab woolen uniform cloth was adopted for winter service and the shade proved by experiment to be less conspicuous and more desirable for army service than the



SAMPLE OF THE NEW OLIVE DRAB UNIFORM CLOTH.

khaki color, it was considered wise to adopt a similar color in the cotton cloth, which should not only have these advantages but would simplify the question of equipment and uniformity if only one color for both summer and winter was used.

This question of color had been under consideration for several years and army contractors had been asked to submit samples of the olive shade cotton cloth as far back as 1906, but without producing a fabric satisfactory to the department, both the laboratory and field tests being discouraging. In the latter part of 1908 manufacturers of dyestuffs and of cloth were asked to look into the matter and experiment, with a view of producing satisfactory fabric which should also fulfill the strength and color tests. The Massachusetts Mills at Lowell, Mass., after long and expensive experiments, succeeded in producing with the Indanthrene dyes of the Badische Co. a fabric which the department states, stands all the tests prescribed for the khaki and several more which have been added to cover the requirements of the new shade. The fabric is shown herewith and the specifications are as follows:

War Department,
Office of the Quartermaster General.

Specifications for 6 1/2-ounce olive drab cotton cloth.

Material.—To be made from American cotton, not lower grade than "strict middling" nor shorter staple than what is known as one and one-sixteenth (1 1/16) to one and one-eighth (1 1/8) inches.

Weave.—To be of 4-harness twill, three up and one down ($\frac{3}{1}$) with the twill as prominent as possible.

Construction.—All yarns to be single; the warp to contain not less than 2,500 threads, and the filling to count not less than 54 per inch.

Width.—Not less than twenty-eight (28) inches nor more than twenty-eight and one-half (28 1/2) inches.

Weight.—Not less than six and one-half (6 1/2) ounces nor more than seven (7) ounces per lineal yard.

Strength.—The tensile strength of the cloth to be not less than one hundred and thirty (130) pounds per inch in the direction of the warp, and not less than ninety (90) pounds per inch crosswise, or with the filling.

Quality.—The cloth must be soft, pliable, smooth surfaced, uniform in color, free from all clearly recognizable imperfections, and contain no more sizing when finished than the standard sample.

Color.—To be dyed in the raw stock, the warp to be brown and the filling green, producing in the cloth the shade shown in the standard sample.

Fast to laundering, perspiration, urine, and climatic influences, such as sunlight, air, and exposure incident to the military service.

The following are the official tests, chemical or otherwise, viz:

1. (a) Washing three times with Oleine soap (Army issue), material to be thoroughly dried after each wash. Soap to be applied on face of the cloth and then completely washed out, using a scrubbing brush in the process.

(b) Boiling for ten minutes in a solution of soap (80 grains of ordinary laundry soap to one pint of water).

2. (a) Steeping twenty-four hours in lactic acid sp. gr. 1.21, U. S. P.

(b) Steeping twenty-four hours in a solution of citric acid, made by using three drams of citric acid to two fluid ounces of cold water.

3. Steeping in commercial muriatic acid 20° for 10 minutes and rinsing in cold water.

4. Treating by first wetting out with water, then dipped in a solution of permanganate of potash (by dissolving one part of permanganate of potash and 16 parts by weight of cold water) for 2 minutes. Then steeping for 10 minutes in a solution of bisulphite of soda (made by dissolving one part of bisulphite of soda dry in 10 parts by weight of cold water).

5. Treating with a 3° Tw. chloride of lime solution for one hour.

Cloth must then show no greater change of color by these tests than that shown by standard sample under like tests. In all points not covered by these specifications to be like and equal to the standard sample in all respects.

Adopted March 13, 1909, in lieu of specifications of August 15, 1908 (No. 991), which are canceled.

J. B. Aleshire,
Quartermaster General, U. S. Army.

We have analyzed the sample submitted with the following results:

Olive drab new standard sample. Massachusetts Cotton Mills.

Weight.—6.72 ounces per yard, 28 inches.
Warp.—85.5 ends per inch, 11.9s yarn.
Filling.—53.3 picks per inch, 9.8s yarn.
(The sizes are for the yarn as it lies in the cloth without allowance for takeup.)

In this connection it is interesting to compare the analyses of the British khaki fabrics published last August.

No. 1 British from Wigan, England.

Weight.—6.3 ounces per yard, 28 inches.
Warp.—97 1/2 ends per inch, single 14s yarn.
Filling.—54 picks per inch, single 10.8s yarn.
Sizing.—None.

No. 2 British from Stockport, England.

Weight.—7.2 ounces per yard, 28 inches.
Warp.—86 ends per inch, single 10.2s yarn.
Filling.—49 1/2 picks per inch, single 9.5s yarn.
Sizing.—None.

It is in the color specifications that the greatest interest is to be found. The construction of the fabric conforms fairly closely to the best types of English fabric and is such as would be expected to produce a similar fabric. The strength requirements have been increased from 125 lbs. warp ways to 130 lbs. and from 80 lbs. filling way to 90 lbs.

It will be noted that the fabric is required to be dyed in the raw stock. This is a radical departure, as the previous practice has usually been to dye in the piece with a chrome and iron dye, afterwards treated with a silicating process.

The first four tests are those required for the former khaki colored fabric and when applied to the new material the department states produces not the slightest change. Exposure tests of six weeks showed absolutely no diminution. The new tests are Nos. 3, 4 and 5. The muriatic acid test is adopted to show whether chrome and iron had been used, as the department found the iron dye injurious, particularly in manufacturing the cloth into garments. The needles broke and cut the threads. The permanganate of potash test was adopted as the most severe known chemical bleaching test, the department believing that the test approximates three years' exposure in service. These tests also have the effect of preventing the use of sulphur dyes which the department objected to as undesirable for the fabric.

The new fabric looks and feels well. It compares favorably in appearance and texture, softness and flexibility, with the English goods. A pin or needle passes through it easily and with little friction. The breaking strength warp way as tested by us was 158 lbs. and filling way 128 lbs. We are informed by the department that no criticism of the fabric itself has been offered even by the former contractors, but one of them has entered a bitter protest against the tests, claiming that the last two are impracticable and injurious to the cloth. They also claim that the only known dyestuff material that would produce the desired shades and give the tests required, is one of the Indanthrene colors made only by the Badische Co., which would result in giving the monopoly of these contracts to any mills with whom the Badische Company might agree to restrict the sale of this particular dyestuff.

The department answers the criticism of the severity of the tests by saying that they are not to be applied to the cloth except to the swatches supplied for examination and analysis and for the purpose of ascertaining certain facts in the manufacture and dyeing of the goods and also for the purpose of concentrating into a laboratory test the effect of long time service in the field. The contractor states that the tests are much more stringent than those to which cloths used by foreign armies are subjected. The department believes that if American mills have

been successful in producing a fabric to stand the severest tests known and more severe than those used for foreign armies, it is a eulogy for the successful efforts of American textile skill.

In answer to the complaint that there might be a monopoly in the manufacture of this fabric should the manufacturers restrict its sale, the Badische Company has offered to give bond for such an amount as the War Department should desire, that they would sell the dyes used to produce this shade at the same price to any and all manufacturers.

The Quarter Master General's department states that it wishes to get into closer touch with American manufacturers and that it prefers to do its business direct with them or their agents.

The new specifications will tend toward this end as the goods in future cannot be bought in the grey and then converted.

The Quarter Master's department advertised on April 10 for proposals to deliver under contract 825,000 yards of this olive drab cotton uniform cloth. The former contractors protested that the time available was too limited for them to perfect material which would stand the new specifications adopted March 13, so the opening of the bids was deferred until June 10. Smith, Hogg & Co., representing the Massachusetts Cotton Mills, were the only bidders, their bid being 25 cents per yard.

During the period when the khaki material was purchased from the converters, the price ranged from 22 1/2 to 27 1/2 cents. The English Wigan and Stockport material cost about 14 1/2 cents a yard in Manila and Cuba, in 1907.

We understand that although the former contractors were unable to perfect a material that would withstand the new tests in time to submit bids for the June 10th award, several of them are going ahead to develop the new fabric and have stated that they expect to be in the field when the Government next advertises.

In an interview with officials of the Quarter Master General's Department in Washington we were informed that if during the coming year and before the letting of the next contracts, it was shown that a yarn or piece dyed fabric could be produced that would possess all the desirable qualities of the new standard, with the fastness of the Indanthrene dyes under tests to demonstrate the same facts, the specifications would be changed to admit other than raw stock dyed goods.

If the Government has succeeded in getting a fabric as satisfactory as they believe the new one to be for army service, they are to be congratulated as well as the American manufacturers. The real and final test will be determined by the results of the nine months' actual wear in the service required of the uniforms. The force of the criticism directed against the specifications and tests will be demonstrated in the actual working out of the matter. There are, of course, possibilities of collusion and monopoly under the new specifications as there were certainly very serious defects under the old. In the development of a new fabric, as in this instance, or to meet the demands of fashion, some one concern leads the van. It is always so. When its success has been demonstrated, others will follow and it is only reasonable to suppose that before future contracts are let, other mills will give their attention to this work and offer a wider field for competition.

The first and most important point to be considered is whether the army has secured a superior American made fabric for the service required, at a fair price. The Quarter Master General's Department thinks it has and the evidence at hand seems to bear them out.

If subsequent developments show that American manufacturers or converters offering equally desirable fabrics are debarred from fair competition, there is no fear but what publicity will be given to the facts in the interests of a square deal for all concerned.

Japan has something over one hundred cotton factories, of which about 15 per cent. are making cotton goods, and the remainder making yarns, amounting to almost 1,000,000 bales annually.

SEASONABLE FABRICS.

DRESS GOODS.

While the immediate demand for wool dress goods is quiet, the manufacturers are well satisfied with the amount of business that they received for the spring and summer seasons. In a great many instances the manufacturers have closed out their entire lines at the opening prices. An unusual large number of orders are being booked for fall dress fabrics, in fact, several of the popular weaves are sold up for early fall shipments. The commission houses predict a scarcity on these popular weaves and colorings during the early fall season, as most of the mills are confining themselves to filling back orders and will not make up surplus stock. Several of the large buyers who feel that early shipments can be handled to good advantage are instructing the mills to deliver their orders as soon as possible irrespective of the shipping date on the original orders. This indicates that the early fall trade on dress goods will be better than in former seasons.

Broadcloths continue to be the leading fabric for fall and will undoubtedly duplicate the success of last year. Plain serges and panamas are doing well and will gain favor as the season progresses.

Prunellas, henriettas and other satin faced cloths are in demand for early shipments, but the more conservative merchants feel confident that rough weaves will finish the coming seasons.

Owing to the vogue on plain colored materials the demand for fancy dress goods has not been as active as in former seasons. Hair line stripes continue to be favored. Fig. 1 shows a cream ground stripe effect 50 inches wide at 90 cents a yard from Franz Merz. While stripes are favored over checks and plaid, the trade is taking shepherd checks in all of the small sizes. These checks will finish the season strong. Fig. 2 shows a corded stripe panama 45 inches at 67 1/2 cents from the Garfield Worsted Mills.

SILKS.

Very few changes have taken place in the silk market during the month. Popular priced rough weaves continue to be in demand in all of the leading colors, especially tans, which the cutting up trade are using in large quantities. The manufacturers of these rough silks have enjoyed one of the most prosperous seasons that they have

FIG. 1.

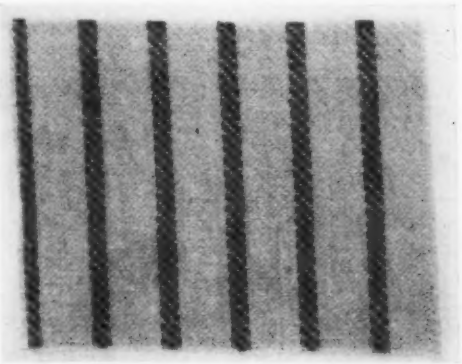


FIG. 2.

ever had. Several of these manufacturers are receiving reorders for full color assortments, both for immediate and fall shipments. Rough silks will be favored for the early fall trade.

Foulards are finishing the season strong. There continues to be a demand for the popular designs. Fig. 3 shows a neat design 24 inches wide at 57 1/2 cents a yard from Valentine & Benteley.

Generally speaking the silk merchants are turning their attention towards the fall trade. Some large orders are being booked

for satins and from the activity with which trade is ordering these satins, it is very evident that the satin vogue will be as great if not greater during the coming fall season than it was last year. Several of the manufacturers who cater to the large trade are sending out notices that they will be unable to make early shipments unless assortments are given at once.

Both plain and fancy messalines are

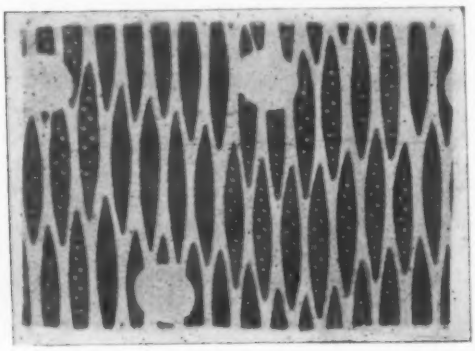


FIG. 3.

doing well for fall. The trade is favoring the plain messalines in the new cashmere finish, which creates a twill faced effect and makes the cloth more attractive. Hair line stripes continue to be in demand.

There is very little demand for plain colored taffetas, due to the popularity of soft silks this season. Black taffetas continue to find a ready market, several of the mills having made slight advances on their black taffetas.

In the fancy silk market stripes continue to be the leading seller with shepherd checks gaining favor as the season progresses.

COTTONS.

Trade continues to be very active on all lines of cotton piece goods and taking the situation as a whole the market is very strong. Prices are firm with a tendency towards advancement on some of the staple lines. Fine wash fabrics continue to find a ready market, especially those fabrics that have been so popular this season.

Several of the jobbing houses are offering their stocks of staple wash goods at reduced prices to make room for their new fall lines which are being received earlier this season than usual.

A number of buyers from the jobbing centers are in the market supplying their immediate wants and completing their fall purchases. These buyers are favoring plain weaves for early fall trade.

Mercerized poplins and reps are holding a very strong position in the market, in fact these poplins are short in supply for immediate shipments. Several of the mills are sold ahead from four to six weeks. That poplins will be very strong for fall is evident by the large number of orders that are being placed for spring 1910 deliveries for complete color assortments.

The brisk demand for staple domestic cottons during the past few weeks has been one of the features of the trade. Wide sheetings and sheets were advanced 2 1/2 per cent. The trade has taken this as an indication that other lines of staples will be advanced shortly, and with this feeling they are buying very freely. Both the jobbers and retailers have been keeping their stocks very low for some time, but with the tendency towards advances they are placing large orders for their own protection.

Popular priced dress ginghams are very strong, both with the retail and cutting up trade. Apron ginghams continue to be in demand.

Seasonable weather has created a demand for all grades of white goods especially for sheer lawns. Advances of about 1/4 of a cent a yard are being made on some of the low numbers of long cloths and India linons, due to the recent advances on grey cloths. Mercerized jacquard crossbar checks and stripes are in great demand.

Several of the importing houses have opened their lines of ginghams and wash novelties for next spring and are encouraged by the orders they are receiving.

From Broussa, the silk-producing district of Turkey, there were exported in 1905, 132,550 pounds of cocoons, mostly to Italy, and 948,145 pounds of raw silk, of which 90 per cent. went to France.

THE TESTING OF TEXTILE MATERIAL.

BY J. H. LESTER, M.Sc., F.I.C.

A Paper Read Before the British Association of Managers of Textile Works.

SCIENTIFIC BASIS.

It is still necessary, when discussing the testing of textile material, to point out that the subject can by no means be exhausted by the most careful examination of the operations carried out in the typical testing room of the factory. It is usual in such places to find a warp reel, a strength-testing machine for yarn, a balance, and, it may be, apparatus for testing for moisture, twist, and the strength of cloth. Quite as an exception one may find a microscope and other costly instruments, regarded by the youth in charge, and who is known as the tester, with something much akin to reverence—certainly not with familiarity. Under such or less favorable conditions most of what is called "testing" is done in the cotton industry in Lancashire, and it only requires the occasional supervision of an intelligent manager to ensure the reputation of the firm as "doing all their own testing."

A very different view of the matter must be dealt with tonight, and I cannot be content to consider the testing of textile material upon any lower level than that of an exact science, founded as it can only be upon physics, and dealing as it must in particular with microscopy, chemistry, and botany, and to a less extent with other recognized sciences. We shall find that the man best capable of comparing and selecting cotton-seed has not only a thorough acquaintance with markets, prices, and the smell and taste of cotton-seed—that is to say, with the practical side of the matter—but he is the one who has a workable knowledge of agriculture and botany, and whose knowledge of applied chemistry teaches him just what he can do with seed that is to be crushed. The best man to test conditions of humidity, to interpret the results and to use them, is not merely a ventilating engineer by name and in practice, but he is the one who combines these virtues with a knowledge of the principles of meteorology. The testing-room operator who has been trained to exact methods of measurement of length, weight, strength, etc., as taught in the science of physics, will make in the end a far more useful worker than he whose knowledge of weighing and measuring is confined to what he has seen of the operations of the grocer and the draper; and, to conclude, the best detective in tracing out the causes of chemical damage to cloth will not be bred from the class that produces bone-setters, water finders, and self-styled professors, but rather from the ranks of trained analytical chemists.

Discount these statements as we may, they still contain so much truth that we must be struck with the utter absurdity of placing a lad who knows absolutely nothing of science in charge of a testing-room. He may be trained in time to act as a good machine acts, but unless he follows a most carefully devised course of study, the testing-room of that works will reflect no exceptional credit upon the management. But with reasonable talent and authority installed in the testing-room, on the other hand, it becomes as I suggest it may with advantage a center of technical control from which every novelty, every improvement, and every step of progress must radiate.

There is, I think, no more prominent fact which experience of testing has taught me than this: that the firms which today are taking a deep interest in their testing-room are invariably to be found in the van of technical and commercial progress. Testing is to them no longer limited to the use of a few weird-looking instruments used for the mechanical production of figures of merit. It has become a study, a research, and a sure foundation for progress.

DEFINITIONS AND LIMITATIONS.

Testing is not the science itself which underlies the production of textiles, but it is at the same time a connecting link between theory and practice, and between the science and the art of textile production. Nothing but an artificial separation can be drawn between "testing" and "research"—at any rate, as concerns textiles—and we need no

more try to limit the meaning of "testing" to the making of certain simple mechanical operations than try to enforce upon others the acceptance of a "tester" as defining a person who ought to be not merely a scholar of University standing, but also to have wide and deep acquaintance with the technology of his art.

Lewkowitsch recently described the industry of soap-making as having been "too long looked upon as a mere art," and as being in process of taking rank as "a scientifically well-founded industry, the operations of which are governed by the laws of mass action, the phase rule and the modern chemistry of colloids." Within recent years it may be said that the arts of dyeing and printing have been in many quarters regarded in just the same light, and although spinning and manufacturing can never quite attain to a similar position as industries, they have a definite scientific foundation if we will but dig deep enough to bring it within sight.

STANDARDS.

In speaking of length, weight, hardness, strength, and other properties of textile material, most of us imagine that we either understand what the words mean, or can picture them in our minds. But when we have to deal with that kind of testing which is based upon science, upon law and order, care and precision, and especially when we think about the setting-up of standards which should serve our industry for all time, we may well pause and wonder at our own ignorance. Few of us would undertake to describe offhand the difference between what is called the "strength" of yarn or cloth and the strength of a strong man.

Not one of us can describe in terms of any kind whatever the precise degree of hardness or softness of yarn or cloth, and yet these characteristics are of very real consequence, and often determine the commercial value of textiles. No methods exist for measuring the hardness and softness of textiles, and consequently there are no standards; and the conclusion I wish to draw is that if the value of science to our industry had been long recognized, these matters would probably have received attention.

Lest we are told that the expression of hardness and softness in definite terms is unnecessary for practical purposes, we may turn to the simpler question of length. A lea of yarn is accepted as 120 yards, but we must suppose it to be of little or no moment to the trade as a whole that differences of two to three per cent. arise, according to whether the material is drawn from a hank or from a cop when run on to the wrap reel. Since all yarn is more or less elastic, the actual length of any given portion depends purely upon the degree of stretch or tension. The length of 120 yards set out upon an inelastic scale represents, of course, a standard length, but to measure yarn without setting up a definite standard of tension, is just as fair and honest as it is to measure the length of the fish with the indiarubber tape measure sometimes given to piscatorial experts.

To fix a standard of tension to control the length of yarn, and thus to make it possible to test yarn more exactly, would probably be of little or no benefit to the individual trader, and perhaps this is one reason why standards are as a rule avoided by buyers and sellers, or are, at any rate, not encouraged. It is worthy of note, of course, that the lack of an acknowledged standard of tension affects not only length, but count also, and applies to cloth as well as to yarn, and, further, that in some cases a difference of 2 per cent. in length is equivalent to a difference of 2 per cent. in value.

REED AND PICK.

It is clear enough that tests of reed and pick involve the standard of length, but here we find that trade custom is by no means agreed. The imperial inch is, of course, supposed to be accepted; but whereas one school, generally the buyers, say that "threads per inch" should represent the precise number of threads and fraction of a thread per inch, we have practical men saying that fractions of a thread cannot be counted—and, consequently, perhaps with some advantage to the school of buyers, we

often find that the custom is to count as many threads as can by any setting of the glass be seen or partially seen. Every thread is counted as a whole one, even if but the slightest edge of it comes within the field.

The solution of the difficulty to suit the purposes of those who have to calculate results, and of those who have both to buy and to sell on a test which they can make for themselves at a moment's notice, is not quite as easy as might appear upon the surface, but it is by no means impossible, and it is a duty which any authority concerning itself seriously with the real and obvious needs of trade will take up. If our system of weights and measures admits of no improvements, if standards of all kinds have reached perfection, if trade contracts are invariably explicit and provide for every reasonable difficulty and dispute likely to arise, the existence of such an authority would be superfluous; but since the conditions referred to and pertaining to the cotton trade are in point of fact lamentably behind those of many other trades, I venture to say once more, as has been said by many another, that it is high time for traders to take united action, not for their individual but for their collective benefit. There is surely no doubt that the "old hand" who is well up in the tricks of the trade, and who knows just how far he is bound by his contract, has a real advantage over the well-intentioned and honest, though inexperienced, trader.

To return to the subject taking its place in our examination of the standard of length, and especially as applied to measurements with what we all know as a "counting glass," it is necessary to give a warning to users of this instrument not to rely too closely either upon the results obtained in its use or even in the instrument itself, for I have recently had it from one of the makers that the only precaution observed in their production is that the gauge spaces are punched with a standard punch. While this is, of course, a proper proceeding, it is of even greater importance that the finished gauge should be checked, as all measuring instruments should be checked, with a micrometer. It is easy enough to use a correct tool so as to give an incorrect result. Considering the accuracy commonly attributed to these instruments, the users may reasonably demand that much more attention be given to them in manufacture than has been given to many which have come under my own observation.

DEGREE OF VARIATION.

Passing now from the mere standardization of length and count, we should briefly consider that degree of variation from lea to lea, from cop to cop, or from one yard of cloth to the next, which is unavoidable, or shows at the other extreme gross carelessness in production. A standard is, of course, by nature or intention, unalterable, but reasonable limits have often to be fixed above and below the standard, within which limits no claim or rebate can or should hold good. In considering suitable limits to apply to the count of yarn, certain difficulties arise out of variation in quality for the same count, but they are by no means insurmountable, though they allow of no general rule being applied.

The only attempts at the setting-up of limits for the count of yarn with which I am acquainted are published by Hertzfeld, in his useful little book on testing; but one really vital consideration has been overlooked, and that is as to whether the figures are to be obtained as the result of single tests (and if so upon what length), or are they the result of several tests? When I say that out of quite an average delivery of nominal 34s yarn I can often find a fair amount of 24s and of 54s, it must be admitted that for many purposes limiting figures would be of value to buyers. There is one great danger in the fixing of limits, and that is in the possibility of depreciating the standard upon which we are working. For example, if 32s is ordered and the limit allows 31s to be delivered, the latter figure is likely to become the actual standard, for the spinner will know that 31s is acceptable. It would seem to follow that any limit adopted should merely be as a control against any

part of the delivery departing to more than a certain extent from the average, and that the standard figure accepted should apply to the average without exception.

MOISTURE.

We find in the wood pulp trade an example of sound and reasonable practice in the matter of standard of moisture, and it is worthy of note, in view of the greater interest now being taken in moisture in cotton. The moisture standard for wood pulp is 10 per cent., but the seller is allowed to deliver pulp containing up to 10 1/2 per cent. of moisture. If, however, a claim is made by the buyer—say, when 12 per cent. of moisture is shown according to the official test—the rebate to be allowed is not only 1 1/2 but 2 per cent., and the standard is not depreciated.

Finding ourselves already dealing with moisture considered as a standard, it may be pointed out that in a former address to your Association I dealt with moisture in cotton at some length. Since that time the standardization of moisture in yarn, at any rate, has received attention in a court of law, and Judge Bradbury has said in the Oldham County Court that his decision fixed upon spinners the standard of moisture set up by the Manchester Testing House, and that spinners could only depart from the acceptance of that standard by expressing the same in writing in their contracts. That is the state of the law as I believe it to exist today, and so far as water is to any extent still bought at the price of yarn, the receivers can no longer complain that they have no redress.

STRENGTH TESTS.

The time at our disposal will by no means allow of deep consideration of the subject of strength considered upon its scientific basis, and more particularly as a standard, though the unexplored nature of the subject and the temptation to build up theories is most alluring. Just as in dealing with counts we found that standards of length and weight were involved, so with strength we have to consider weight, since the breaking strain is ascertained by a kind of weighing machine; length, since for comparison, at any rate, we must always take the same length; and a third factor of vital importance, generally neglected and often forgotten altogether, elongation. And it is particularly with this last consideration of elongation as a factor of strength that we may deal with profit. The elongation of a sample is, of course, represented by the increase of length it undergoes up to the point of breakage when tested for strength, and it will now be clear that unless all samples are measured at the same standard degree of tension before the strength test, very great differences in elongation must result.

In the absence of a standard of tension, elongation figures as obtained by different observers would vary enormously. This is exactly what has happened, and those few persons who have recognized the value of a knowledge of elongation have very soon found the difficulty in obtaining concordant results to be so great that they have given up the idea of using it as a basis of test between buyer and seller. This is not the only case in which the lack of one standard makes another impossible until the first is fixed.

But even if our elongation figures are based upon properly standardized conditions they may be valueless, and will certainly be so if the samples under examination vary in the character of the elongation. We may have, for example, one yarn which pulls out easily until near the breaking point, while another starts "taking the load" or exerting its elastic force from the very beginning of the test to the end. Let us note in passing that we now use the word "elastic" for the first time, and carefully avoid confounding it with "elongation."

In dealing with cloth as well as with yarn, standards of tension are absolutely essential to scientific testing; and we find in cloth testing also, in an even more marked degree, the uselessness of elongation figures and the need for a means of expressing the character of this elongation. So long as our

experience has been with cloth and yarn only, we shall find ourselves unable to express to others, or very likely we cannot even express to ourselves, just what we mean by this character of elongation and elastic force. Fortunately the manager of a textile works has to be something of an engineer, and all are well acquainted with the elements of steam engine practice. At any rate, we may assume this. Then let us compare the power required to break a thread and that required to drive a steam engine. The steam is admitted into the cylinder, and acts upon the piston at varying pressures from the beginning to the end of the stroke. Almost in the same way a piece of yarn or cloth may be broken in a testing machine by applying a varying (it happens to be an increasing) pressure, until the work is done—that is to say, the sample is broken.

When the engineer wishes to know exactly what is going on within the cylinder, he takes an indicator diagram as a matter of course, and, though it is seldom done, it is not very much more difficult to obtain an indicator diagram which will show almost everything that can be shown during the straining of a piece of cloth or yarn up to the breaking point. The usual object of the engineer in taking steam diagrams is to ascertain the amount of work which the steam is doing in turning the engine round, and in precisely the same manner an indicator diagram of a yarn or cloth test shows the amount of work which has to be done in breaking the sample. It takes but little thought to convince one's self that the amount of work required to break any material is very near akin to what we generally consider as the strength of that material, and yet this "amount of work" is as different from the result of what we all know as "a strength test" as it well can be. There is, in fact, no more similarity, or little more, than exists between the steam pressure and the horse-power of the steam engine.

The indicator diagram method of test I have referred to, though scarcely used at all and little understood in textile investigations, is of quite common application in the testing of iron and steel, and gives the best possible indication of what is well expressed as "toughness"; and similarly it shows the "toughness" of yarn or cloth so far as that term is convertible with the correct scientific description or "work done during and up to destruction of the sample." It has been said that the founder of the great firm of J. and P. Coats would have no testing machine other than his hands, and that he could value thread by the character of the breakage;—and, whether he knew it or not, his test showed, though in very crude fashion, the amount of work necessary to be done in breaking his sample. This test, carried out in scientific manner, is what I have to advocate as worthy of very full investigation, as it certainly promises to yield a better criterion of the suitability of yarn for weaving and the suitability of cloth for wear than the customary tests for these purposes.

THE PENDULUM TEST.

Had there been no possible alternative to the preparation of indicator diagrams—or, more properly speaking, stress and strain diagrams—of cloth and yarn, I would certainly never have dared to suggest to practical men that they should encourage that method of testing; and it is partly because the methods I have shortly to suggest may be carried out with greater rapidity than any other tests of cloth or yarn within my knowledge, that they need not be at once dismissed as impracticable. The machine for the purpose is a very simple affair, consisting essentially of a swinging weight or pendulum. During the course of its swing the pendulum is made to break the specimen. Having started the pendulum swinging from a given height, we note the height to which it rises after breaking the specimen, and measure off the difference in height. On a suitable scale the amount of work done in breaking the specimen is read off. You may call the result the "strength" of the cloth in a much more correct sense than the word has ever been applied to textiles before; you may call it toughness, or you may call it the figure of merit for all

purposes where resistance to wear, to pulling, to snapping, and to tearing are concerned.

It is not until we have considered the possibilities of the suggested method of testing, that we clearly see what the tests to which we are accustomed really mean. We may say that they show the resistance of the specimens to a set of conditions which never, or hardly ever, obtain in practice—that is to say, to a very gradually increasing strain. In practice, of course, the strains which cause breakdown are generally sudden—as, for instance, when a machine starts and the thread has to bear the strain of setting a bobbin in motion; or, again, when the flying shuttle or the beating reed subject both weft and warp to distinctly violent treatment. Sewing thread again is vigorously plucked by the take-up motion of the machine in very different manner to that in which it is generally tested.

The same conditions obtain when we consider the breakage of cloth. A sailcloth is most likely to break at the eyelet holes when the wind suddenly catches the sail and pulls the boom over in "tacking." The cloth for flour bags gets split when the laborer lets it fall with a bump on to the floor, and so on right through all the uses to which cloth is put.

I have given more attention to this matter of strength testing than may at first thought seem necessary, but there is one conclusion which I shall assert, even though the element of accomplished success may be lacking, and that is that any radical changes which mark progress in or towards textile improvement will be in the main those which have been based upon a return to first principles, and are not merely improvements upon existing processes. The methods I have outlined, involving as they do principles that had not formerly been applied in textile practice, could scarcely have been evolved as mere improvements upon existing methods. Nor is it altogether true to say that these methods still lack accomplished success. It is true that they have not yet been adopted for practical everyday testing purposes in any textile laboratory, but they have been definitely proved to give the intended result—that is to say, that the simple result of the test as a measure of work done has been proved in the Testing House Laboratory to be practically equivalent to the calculated results from stress and strain diagrams.

TESTING INSTRUMENTS.

In dealing with the progress of physical tests as applied to textiles, a little space may well be devoted to pointing out some of the more glaring defects in existing machines; or, since in nearly every case these defects have come in the course of time to be looked upon as accepted, and therefore permanent, in the trade, perhaps we should credit them with the respect due to a hoary if discredited old age, and call them anomalies. First of all may rank that extraordinary device known as a testing-oven, in which moisture tests of cotton or yarn are sometimes made, and which is of such hopelessly bad construction that different parts register enormous differences of temperature.

The user of this arrangement is warned against heating it beyond 160° to 180° Fahr., or else he will scorch his sample. The fact is that the bulb of the thermometer is placed in the coolest part of the oven and the cotton is placed in the hottest. No test drying-oven should be considered satisfactory unless it is fitted with arrangements which obviate the need for withdrawing the sample when it is to be weighed. And the mention of weighing apparatus brings to mind the use of certain very pretty and curious instruments which have come to be used in the trade for this purpose, constructed on what is known as the quadrant principle, while others are made of a coiled glass rod. These instruments are, of course, useful in their way for very rough testing, but they are far from accurate, and are generally as costly as delicate balances. Those whose duty it is to weigh any substance accurately know well that a balance with equal arms is better than any other instrument for the purpose, and it is worthy of note in this con-

nection that the official testing house in Charlottenburg, Germany, the largest in the world, entirely prohibits the use of quadrant weighing instruments.

(To be continued.)

CONTRACTS IN THE TEXTILE TRADES.

BY WESSEX.

My friend "Americanus" has an esteem for British textile institutions, the like of which many Englishmen are without. Lately he demanded information concerning disputed deliveries. "I want the rules," he explained airily. "I want to know when a delivery of cloth is 'good' and bound to be accepted. Tell me your standards."

My friend smiled as if he had asked something easy. I told him what he did not want to know; told him delivery was good when quality was equal to sample, when weight, width, length, design and color were perfectly correct and delivery was promptly to time. This was mockery to a man who wanted telling how far the English manufacturer was permitted to diverge from sheer perfection. But where cloth is concerned you can say alternatively that there are no rules or that there is an infinitude of them. Trade associations have shirked the tremendous task of laying down regulations to cover all cases. Although there is plenty of local tradition and there are customs which have somewhat general sanction, dispute is always possible over these.

It was impossible to give more than a rough indication. For example, I said, in the plain cotton trade a buyer may be forced to take into consideration the fact that though he gets an end less in the warp he gets a pick extra in the filling. If goods are late the buyer may find that strike or fire-clauses fully cover the seller's delinquency. If goods are fancies and made specially to order, a stronger cause will be needed to justify cancellation than were the goods staples and easier to re-sell. Unless under special circumstances and after having given notice in advance of his intention, a buyer would not be allowed to cancel for merely a few days' delay beyond the contract date. The stringency observed both as to technical features and to time is governed by consideration of whether goods are for home sale or export, of the season and of the purpose for which they are intended.

With illustrations and explanation of the peculiar complexities of British cloth trade one might go on for a week. When enough had been said to show the infinite variety of cases for solution, "Americanus" saw clearly that whatever understandings may exist there is boundless room for dispute. He wanted to know about the settlement of disputes otherwise than by closure of accounts, bad language and extortion of concessions. Here one was able to offer him evidence of something to our credit. For possibly it is wiser to allow cloth traders to make bargains for themselves and to appoint cheap and handy organizations for resolving the knottier difficulties. I showed what Manchester has done by the agency of its Chamber of Commerce. It provides three options. There is first the Testing House certificate and this, or that of the Bradford Conditioning House, may serve to decide a quarrel on a purely technical point. Second, there is reference to expert opinion. For a fee of $7.50 an expert who does not know on whose goods he is adjudicating and who is chosen by the Chamber for his special knowledge of the class of goods concerned, passes his opinion upon samples before him and by this seller and buyer may agree to abide. Third, there is the Tribunal of Arbitration available for one sitting at a cost of about $35.

The Tribunal deals with the whole merits of the case, with the respective faults of both parties and it adjudicates on customs of the trade. Consisting of one, two or three members the court is private from the public and the press. Its awards are finally binding upon both parties and, like the Bradford Chamber, it dispenses trade law at a price for which one could not look at a judge. Indeed at Bradford an ordinary sitting costs only $7.50 and it is a phenomenally expensive action that costs $50. With secrecy, cheapness and despatch, trusted and respected men in the trade settle difficulties as well as there is any chance of having re-

sponsibilities or damages settled and the presence of these Tribunals is very beneficial although not all disputants are reasonable enough to use them instead of the regular courts of law.

"To take a simpler set of circumstances," said "Americanus," "what do you do about disputed yarn?" Perhaps spinners' needs have been greater. At all events they have formulated rules in conjunction with their customers and I handed my friend the cotton yarn contract form, Fig. 1, approved by the Federation of Spinners, the United Cotton Manufacturers and the Manchester, Oldham and Rochdale Chambers of Commerce in 1896.

For his benefit I outlined the rules to which the document refers. By written rule the actual weight of cop yarn is to be invoiced, including weight of tubes if yarn is

YARN CONTRACT.

Specimen of a General Yarn Contract Form, which may be adapted to suit the individual necessities of firms adopting it, the only portion deemed essential being the two sentences printed in red. These, it is recommended, should be printed on all Yarn Contract Forms.

No.

Manchester, ... 189

MESSRS

Dear Sirs,

I / We have this day bought from / sold to you the yarn described below:—

Quantity	Counts	Description	Quality	Price	Time of Delivery	Place of Delivery	Carriage Paid or Forward	Terms of Payment

N.B.—Except as may be specified herein, this contract is made under the rules of the Manchester Yarn Contract Conference. All cases of dispute arising under this contract are to be finally decided by the Tribunal of Arbitration recognised by that Conference

If the particulars are correct, please sign and return to us the attached form of confirmation. If not, kindly advise us of any errors by return of post.

Yours truly,

(Signed)

.....

Manchester, ... 189

MESSRS.

Dear Sirs,

I / We confirm the particulars and conditions of sale / purchase stated in your advice note dated .....

Yours truly,

ordered on tubes. Warps or backbeams when sold by such weight and when the counts are coarse, are not to be invoiced more than 1 per cent. heavier than calculation weight. When sold by calculation weight any deficiency exceeding 1 per cent. is to be allowed to the buyer. A pressed

ON THE EXCHANGE AT MANCHESTER.

10-lb. bundle must contain not less than 9 lbs. 14 ozs. and a 5-lb. bundle not less than 4 lbs. 15 ozs. of yarn. The number of hanks in a bundle must (sewing thread and fancy yarn excepted) correspond with the real counts. Disputed counts, weight, length or condition is to be submitted to the Manchester Testing House for certification and this test is binding. Either party may demand repetition of the test and then the average of the two tests becomes final.

The rules define more delicate points. Thus, a seller is free to replace rejected yarn if he offers to do so within the original time for delivery. If no time is specified, or if "delivery as required" is the phrase on the contract note, six months is implied and within that term delivery must be completed and particulars duly furnished. "Delivery to follow" is interpreted to mean delivery at the same rate as that of the last preceding contract for yarn of the same quality and description.

In a contract for delivery of specified quantities at definite dates each quantity is to be reckoned as a separate entity and cancellation of one portion does not involve the other portions. Sellers are given power to suspend delivery whenever a payment for an accepted delivery—or for any delivery not formally rejected or claimed upon is in arrears. In case of a strike, fire, lockout,

THE CONDITIONING HOUSE AT BRADFORD, ENGLAND.

breakdown or unavoidable occurrence the party affected is to give written notice of his inability to make or accept delivery. The other party has then the option of agreeing to postponement or (within ten days) giving notice to close the contract and to pay or receive the difference which the Tribunal of Arbitration may fix. To this latter rule contracts for export yarn form an exception. Buyers may buy against sellers who are in default and sellers may sell against buyers

and charge the difference, but before doing this, three clear days' notice in writing is required.

"Americanus" looked wickedly as he asked:

"And do you keep all those rules?"

It had to be admitted that they are often broken, that the balance of power and the state of the market had their sway. Nevertheless such are the rules and to them trade practice tends to conform.

The Yarn Contract Conference never meets now. Many of its original members are dead, but their work lives. To these rules men refer in deciding who is in the right, and similarly in the worsted trade for which the Bradford Chamber has laid down rules. These differ from Manchester rules in saying that "delivery as required" means that two-thirds of a contract must be completed within six months and the remainder inside three months more. There are certain resolutions outside the actual rules, but having some of the force of rules, and dating from 1896. Representative spinners, manufacturers and yarn merchants then assembled and agreed that all bundle yarns should be reeled full length and that a 1 per cent. margin might be allowed for shrinkage thereafter. Further, that the limit of deviation from correct count should be 2 1/2 per cent. above or below the count specified. Three standards of condition for Bradford yarns were promulgated (a) 15 per cent. for yarns of hair, (b) 17 per cent. for yarns of long English wool, (c) 18 1/4 per cent. for Botany.

"Well," commented my friend, "be rules perfect or imperfect, they are useful landmarks in the wilderness of trade. How about your trusts, do they bow the neck to the arbitrator?"

It had to be answered that the combines while firm and, on occasion, aggressive, are commonly fair. I produced the rules of a Board formed to adjust differences arising between the Bradford Dyers' Association and its customers. This is the only combine which has its customers bound down as to the disposal of their dyeing work. On this Board customers and Association are represented in a proportion of not less than three to one. It is the court of appeal, for use when private treaty has failed. And when it is found that in one year no cases came into its hands and in the year before one case only, it would not seem that the Association is seriously worse to deal with in the event of dispute than is the average isolated concern.

THE SCAIFE LIFTER MOTION.

BY JOHN BROWN.

The Scaife motion is generally used for building up either double head, spool bobbins, or tubes on all frames, whether cap, fly or ring. It contains three distinct motions, each simple in themselves, which when combined seem rather complicated.

The object of this article is to explain the different parts, giving the functions of each, with methods of calculation for different kinds work required, that the motion may be better understood, and used to the best advantage. With the simple heart motion, also with the mangle-wheel, still used in some drawing boxes, it is possible to produce a bobbin with an equal thickness of weft over all its parts. By putting on an eccentric in place of the heart, spools which have the bulk of the weft in the center and tapering at both ends are produced.

The great advantage possessed by the Scaife is that not only will it build a spool of any shape required, but by throwing the slide motion out of gear ordinary double head bobbins of any traverse can be made. Spools can be made by simply exchanging the eccentric for a heart. Spare hearts and eccentrics are supplied stamped with the length of the traverse. Hearts are used not only in this but in other motions, such as traverse motions for comb leathers, for the reason that there is no dwell or dead part as is the case with cams and eccentrics. In tube building the advantage of the dwell is apparent, because at both long and short ends of its travel the motion is quicker, thus giving the pointed ends required in tubes.

Fig. 2 is the simplest form of lifter motion. Even over their whole length, the

heart, C, working direct on the lifter rail is of such a size that the lifter is moved once up and down the full length of the bobbin at each revolution of the heart, C. If double headed bobbins are required any size bobbin can be built by changing the size of the heart, the only disadvantage being that if bobbins with a larger diameter of head are required, the frame would have to be run so much longer between doffings. The weight

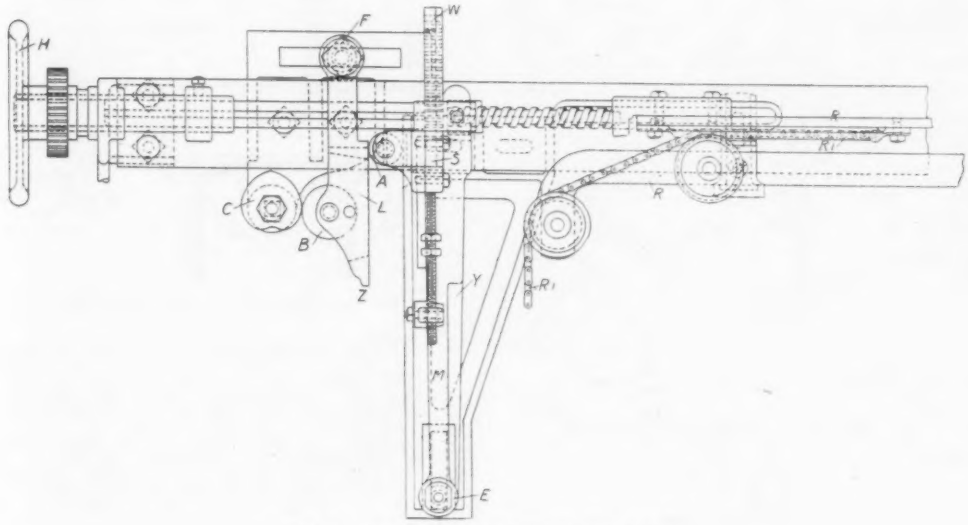


FIG. 1. SHOWING SCAIFE MOTION AT THE TOP.

of the bobbin rail ensures the bowl, B, always pressing against the heart, C. When spools are required a differential motion must be used or the thread from them could not possibly be drawn off in the shuttle without constant breakage. Previous to the invention of the Scaife motion, the Hodgson's motion was used for building spools. The base of this motion was a spiral, undulating disc, giving the motion of a cam, which was hard to regulate, and easy to get out of order. This motion, however, is rarely used now.

Between the heart and lifter rail of the Scaife motion, two levers come into play whose fulcrums are at opposite ends. A comparison of Figs. 3 and 4 shows where the utility of two levers and their relation to each of their fulcrums come in. If the lever, M, was a fixed bar the lifter would travel at the same speed no matter what the position of the slide, S, is with its bowl, A. In Figs. 1 and 4 the slide, S, is shown as it should be set as soon as the frame has been doffed, ready for starting the doffing. As soon as the traverse that is required for completing the build of bobbin has been completed, a long tooth in wheel, W, similar to those used in ordinary knock-off motions on gills and drawing boxes, puts the slide out of gear and the lifter proceeds at the same rate and speed of traverse, until the bobbins are full. The wheel, W, which has this long tooth, has geared to it a change wheel, by which the knock-out can easily be altered if necessary, either for longer or shorter spools, or for difference in build.

The wheel, W, is constantly moving on a screw shaft, a deep keyway being cut in the shaft and the fixed key in W allows it not only to revolve and slide, but also enables it to follow every motion of the lever, M. The lever, M, is connected by a free swinging nut, Y, shown very clearly in the end elevation in Fig. 1a.

The hand-wheel, H, just overhangs the

end of the frame, so that before starting a new doffing the slide, S, is brought up into the position shown at Figs. 1 and 4.

If a heart with a 3/4-inch stoke is used, the lever, L. moves the same distance at the point where the roll, B, is fixed. This communicates its motion to the slide, M, through the roll, A, then through the wheel,

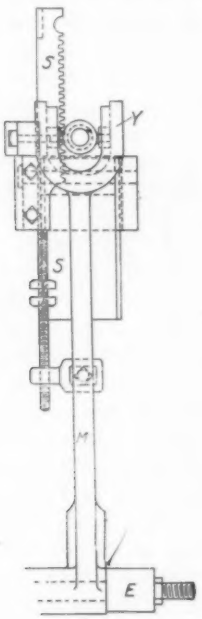


FIG. 1 A.

W, constantly moving the slide and thus altering the distance between A, and the fulcrum, E. The speed and traverse are constantly being changed. Chains are attached to the lifter rail, R, which being fixed at the other end to pillars of the bobbin rail convey the upward and downward motion to the bobbin rail. As previously stated the weight of the bobbin rail is sufficient to ensure the lifter rail pressing against the end of the traveling screw.

In Figs. 2, 3 and 4 part of one spindle cap and bobbin are shown to make the reference simpler. Fig. 5 gives the plan of driving from cylinder to motion. On the end of the cylinder shaft a pulley 10 inches in diameter is connected with another 10-inch pulley by a belt on the same socket as the second pulley. A 40-tooth gear drives another wheel with 100 teeth. On this is fixed a worm driving a 60-tooth gear on the heart shaft. On another heart shaft another worm drives a 40-tooth gear connected by a stud wheel with 40-tooth gear on the screw shaft.

By altering the change wheel from 40 to

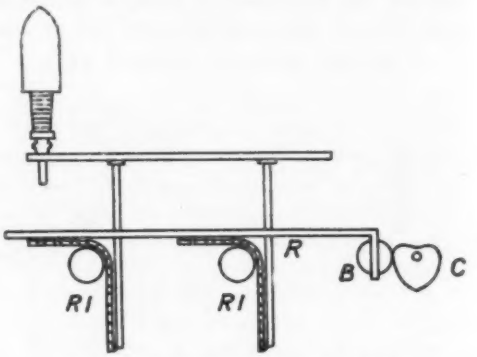


FIG. 2. THE SIMPLEST FORM OF LIFTER.

80 or down to 20 teeth, any rate of speed can be acquired. Of course, any intermediate counts are used as circumstances require.

The following calculations, supplied by Prof. Barker and E. Priestley, will no doubt

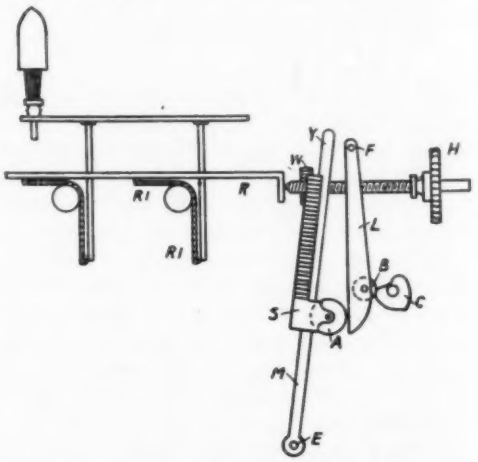


FIG. 3. SHOWING SLIDE AT BOTTOM WITH BOBBINS FULL

be of great service to all who use Scaife motions:

For spool building. The amount of ma-

terial taken up by the bobbin head with the size of the heart and pitch of scroll as employed must be found; also the speed of the heart in relation to the scroll or rack, and the front rollers necessary to build up the material in layers on the bobbin. The speed required to suit the front roller delivery can then be readily obtained by alteration of the change wheels on the motion. The gauge

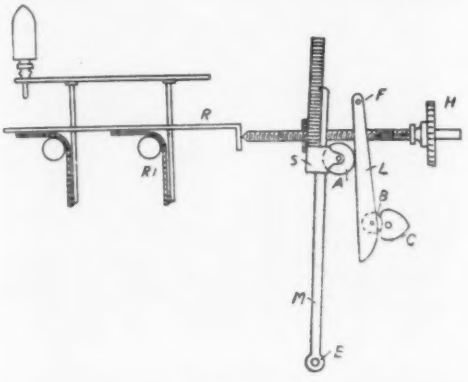


FIG. 4.

point is obtained as follows: The yarn capacity of a spool bobbin 5 inches by 3/4 inch with 1 1/4-inch head is about 239 grains. Divide 239 by 12.5 (grains per yard of 1s yarn). This result, 19.12, is the length of 1s yarn the spool will hold.

Then:

1st. Taking pitch of scroll and size of heart, find number of revolutions the scroll must make to fill bobbin.

2d. Multiply gauge point by counts being spun to find number of yards the bobbin will hold of count in question, and divide this equivalent by the revolutions scroll must make, the result being the number of yards required to form the head.

3d. Find diameter of the yarn by taking the square root of the yards per pound and divide this by the amount of filling space. Result: number of layers or speed of heart.

The relationship is now found between the speed of scroll, delivery of rollers, and speed of heart, but as the front roller speed is fixed by the twist required, the necessary changing must be made at the heart and scroll. For example:

Spool 5 inches by 3/4 inch; 1 1/4-inch head; front roller, 12 1/2 inches in circumference; scroll, 1/2-inch pitch; heart, 1 1/4-inch traverse; yarn, single 40s.

(1) Revolution of scroll to fill 4 3/4 or 5-inch bobbin = 7.

(2) 109.3 yards taken up by bobbin head or by 1 revolution of scroll. Then 109.3 × 36 (inches per yard) ÷ 12 1/2-inch front roller = 314.7, revolutions of front roll to 1 of scroll.

(3) The square root of 40 × 560 is 150. The diameter of 1/40s count is 1/150 inch. Thirty-eight layers of yarn or movements of the heart are required for every quarter inch. When changing from one count to another the changing is done at the heart shaft, thus affecting the whole motion. The varying factors are weight and twist. For example:

(Old No. × New Twist Wheel × New Change Wheel) ÷ (New No. × Old Twist Wheel) = New Change Wheel.

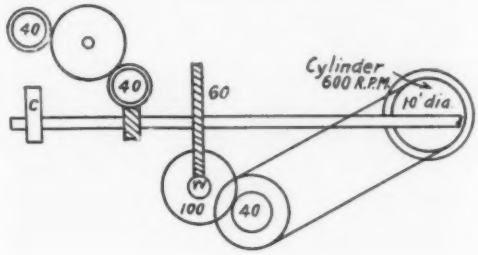


FIG. 5.

The motion seems complicated, but by a little careful attention the various details can be mastered and the full capabilities of the motion made use of.

The writer has to thank Messrs. P. Smith & Son for the working plan; H. Priestman for permission to copy Figs. 3 and 5 from article "The Principles of Worsted Spinning," and Prof. Barker for some of the calculations, which from their simplicity will be easily understood, and will prove of great help to those who are engaged in the trade.

The world's supply of raw silk for the year ending June, 1907, is estimated to be 42 million pounds, of which the United States took about 38 per cent.

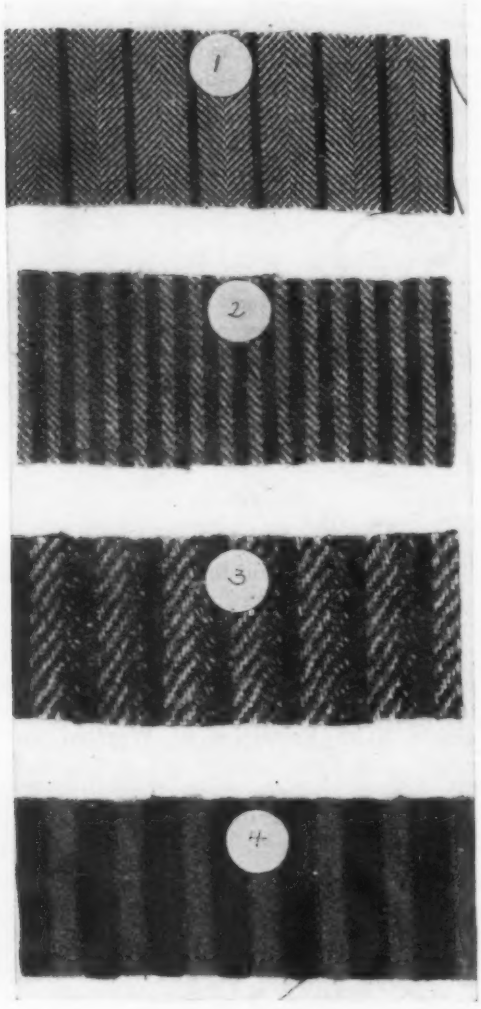
CORRESPONDENCE AND NOTES

Upon Textile Topics At Home and Abroad.

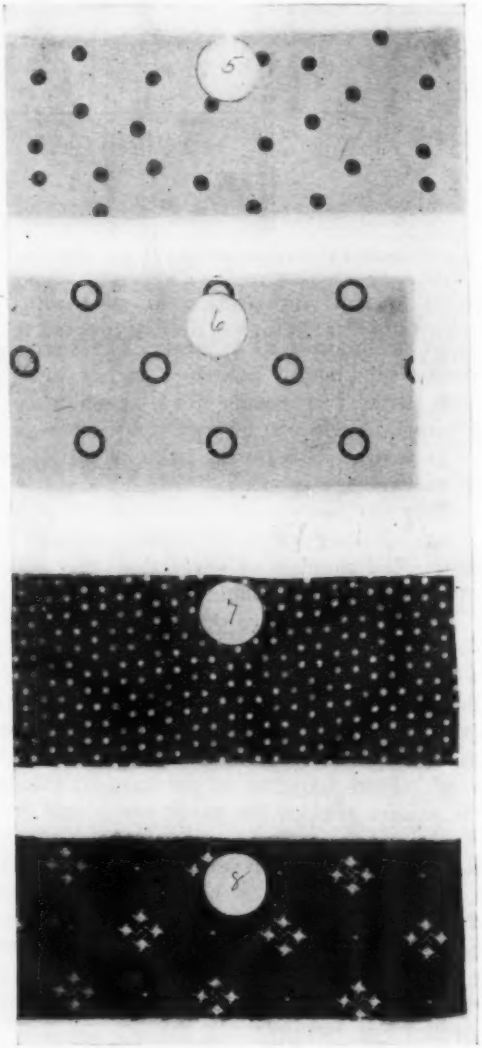
FOREIGN STYLES IN WOOL, SILK AND COTTON CLOTHS.

BY J. W.

Figs. 1, 2, 3 and 4 are the latest styles in ladies' woolen dress goods. Neat stripes are very much in demand in fine twill weaves, grey being a color very much to the front. Some styles as at Fig. 4 are woven on the cord principle.

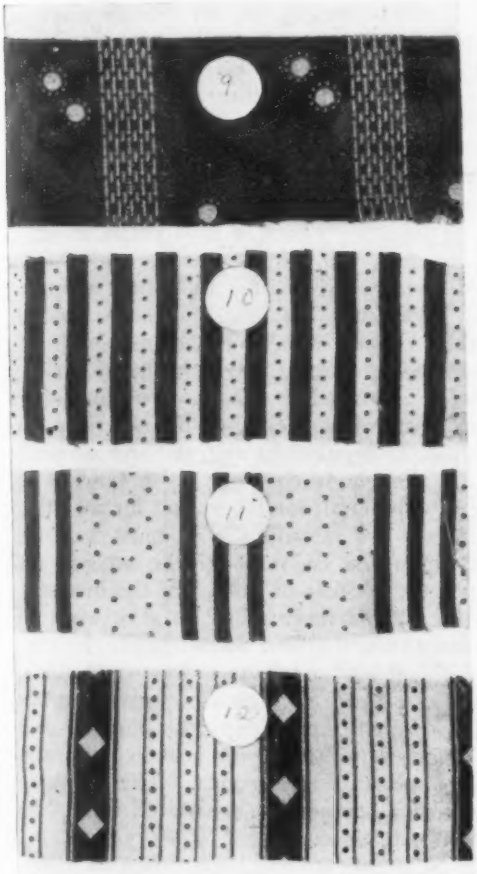


FIGS. 1 TO 4.



FIGS. 5 TO 8.

Figs. 5, 6 and 7 are print styles on fine silk grounds of white and various colors. The styles, Figs. 5 and 6, have various colors of spots, such as blue, light green, heliotrope, rose pink, black and old gold. Those at Fig. 7 have grounds of navy, black, dark green, red and brown, with white spots.

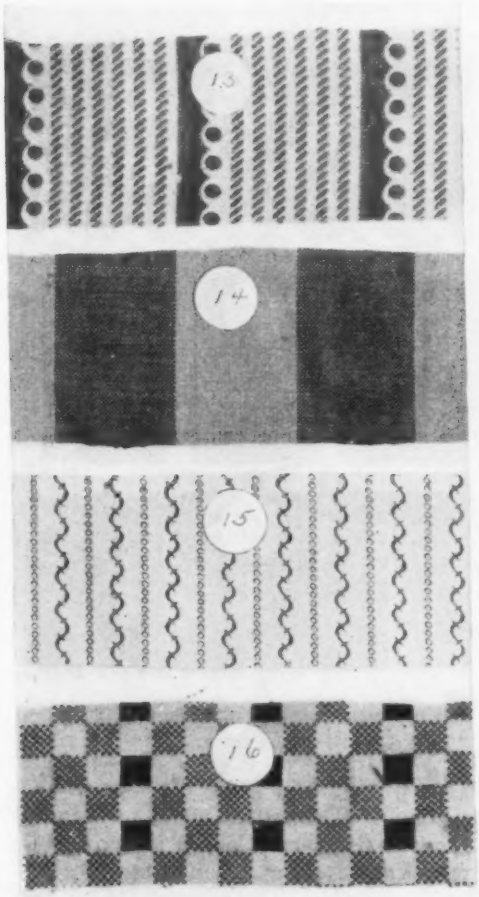


FIGS. 9 TO 12.

Figs. 8 and 9 are styles of spotting and stripes, that are being worn in mercerized sateens. These are woven grey mercerized in the cloth, afterwards dyed and printed in all colors.

Figs. 10, 11, 12 and 13 are new styles in ordinary printed cotton cloths. As will be noticed, spots are very much in evidence this season. The examples given are up to date styles of stripe and spot required. The ordinary makes of cloth are suitable.

Fig. 14. Large stripes are desired for Zephyr cloths such as the one given. The colorings desired are as follows: Dark blue and light blue, dark green and light green, dark brown and light fawn, or two contrasting depths of shade from the same color. The stripes vary in width from 1/4 inch to 1 inch in the cloth.



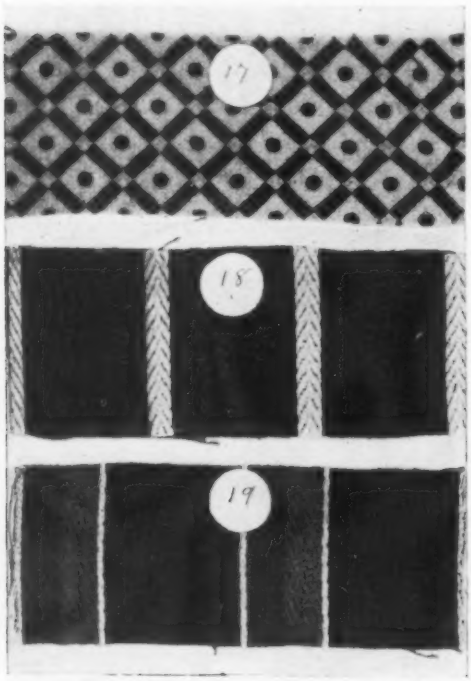
FIGS. 13 TO 16.

Fig. 15 is a neat effective style that is

going in prints for shirtings. Small patterns to imitate dobby weaves are desirable.

Fig. 16. The squared effects are in favor this season for blouse materials, etc. The squares are of various sizes and the boldness is reduced by shading three squares and leaving the fourth square solid. All colors are desirable.

Fig. 17. This is also another style of



FIGS. 17 TO 19.

cotton print cloth in which the spot effect is seen again. The lattice work surrounding the spot is also carried out in larger designs for coverings.

Figs. 18 and 19. These are styles for coat linings which are made from a fine mercerized cotton warp and fine count sof weft. After weaving in 5, 6, 7 or 8 shafts sateen in various colors of ground and stripe, the goods are calendered.

The imports of cotton yarn into China in 1907 were valued at $44,819,672.

ESTIMATING THE COST OF WOOL GOODS.

The merchant who acts only as a distributer of goods has no difficulty in determining the cost of his wares. The invoices tell him in plain figures the cost of his merchandise, which, undergoing no change while in his possession, is sold in the same condition as when purchased, with a certainty as to the profit or loss of any transaction.

The manufacturer on the contrary has to face a far different condition. If he is manufacturing woolen goods he must invest in raw material in the form of wool as it comes from the sheep's back in raw cotton, shoddy, waste, fuel, oil, soap, dyestuffs and chemicals, machinery, belting and other supplies. He pays out large sums for labor and in return for this outlay finds in his possession a stock of manufactured woolens of various grades and market values. No clue as to their cost per yard can be obtained from the payroll, or invoices of material and supplies. What the goods cost per yard, how much for raw material, for labor, and for all other expenses are questions that must be met, and upon the accuracy of the answer depends the success or failure of the business. If the manufacturer relies on guesswork or on inaccurate methods of estimating, he may be selling his goods at a loss or holding them at a figure so high as to prohibit their sale. He will then occupy the position of a merchant who ignores the cost in fixing the selling price of his goods. The ultimate result of a business so conducted cannot be a matter of doubt.

It is of the utmost importance to every manufacturer, not only to estimate closely the cost of his own goods, but that all his competitors should be able to do the same, for the manufacturer who sells goods in ignorance of their cost not only ruins himself but spreads demoralization in the trade and causes loss to all other manufacturers in the same line.

The requirements in estimating cost vary with every mill, and in order to make this article of value to the greatest number, we will confine it as far as possible to a statement of general principles, leaving to each

mill owner the work of applying them to his particular needs.

COST OF RAW MATERIAL.

The cost of the material per yard can be more readily determined than the cost of labor and expense, as only three factors are to be reckoned with in the cost of the stock, viz: cost of raw material per pound, percentage of shrinkage in manufacture, and the value of the waste products. The fluctuations in the amount of the mill's production do not affect the cost of the raw material.

It is necessary to compile statistics of mill work to show the product obtained from material supplied to each department of the mill, such as the various quantities of each sort obtained from the wool purchased, weight of scoured or colored stock from materials supplied to scouring and dyehouse, the yarn obtained from picked stock and the quantity of finished cloth produced from

Monthly Statement of a 12-set Mill on Dress Goods 36", reds 36 picks

Dept.	Product	Labor	Expense	Average Labor	Average Expense
Sorting	74,765 lbs	299.06		.004	
Scouring	29,906 "	101.68		.0034	
Coloring	29,906 "	221.30	852.32	.0074	.0285
Picking	29,906 "	59.81	86.73	.002	.0029
Carding	148,500 lbs	519.75	133.65	.0035	.0009
Spinning	148,500 "	772.20	29.70	.0052	.0002
Spool & Dress	6187 doz	346.50	18.61	.056	.002
Weave. Day	74,250 yds	534.60	51.98	.0072	.0007
Weave. Piece	74,250 "	1752.30		.0236	
Finishing	74,250 "	816.75	185.62	.011	.0025
Repairs	74,250 "	155.92	51.98	.0021	.0007
Ins + Taxes	74,250 "		371.25		.005
Fuel	74,250 "	80.19	348.98	.001	.0047
Freight etc	74,250 "		133.65		.0018
General	74,250 "	482.62	155.92	.0065	.0021
		$6142.68	2415.39		

Dividing the labor cost ($6142.68) by the yardage for the months (74,250 yds) gives us .08 27/100, the average labor cost per yard. Dividing the expense cost ($2415.39) by the yardage (74,250) gives .03 25/100 as the average expense cost per yard — the total for labor and expense being 11 52/100 cents per yard.

FIG. I.

goods as they come from the looms. From such records the cost of the raw material in any one of our fabrics is readily calculated.

COST OF MANUFACTURING.

In a mill making but one fabric the labor and expense per yard can be found by dividing the total amount of payroll and expense charges for any given period by the number of yards manufactured during that time. Such a calculation, however, in a mill making two or more fabrics would leave the cost of each fabric unknown. The great variety of goods, varying in quality, weight, size of yarn, number of threads per inch and in finish made in the same mill complicates the calculation of the cost of manufacturing each fabric. A mill may have several classes of goods in process at one time, some requiring careful sorting of the raw material, while others are made from stock as it is received; some stock dyed, others piece dyed. Under such conditions a system must be adopted that will fairly apportion the expense among the different grades of goods.

To do this we must first determine the cost of each process. This can be done only from the records of each department, carefully collected during a period of at least six months, when the department was operated at its full capacity. These statistics are the basis of our calculations. They not only furnish us with the facts on which to base the cost of each of the fabrics, but also with a clear statement of the work in different departments of the mill. They should be compiled monthly; these monthly reports will prove invaluable to the manager of a mill, showing him at a glance whether the department is doing its work at a greater or less cost than in former months, and indicating the effect of any change of machinery, help or methods. A form for such a monthly statement will be found at Fig. 1.

Monthly Statement of Fixed Charges of a 12-set woolen mill on Dress Goods 36" wide, 36 picks

74250 yds 36 inch goods, 36 picks = 26730 yds. 4/4, 50 picks

Dept.	Product	Labor	Expense	Average per yd. 50 picks Labor	Expense
Weaving	26730 yds	534.60	51.98	.02	.002
Repairs	"	155.92	51.98	.006	.002
Int. & Taper	"		371.25		.014
Fuel	"	80.19	348.98	.003	.013
Freight	"		132.65		.005
General	"	482.62	156.92	.018	.006
		1253.33	1113.76	.047	.042

FIG. 2.

Each department has its own unit of production, such as the pound of stock for the dyehouse, the run of 1,600 yards of yarn for carding and spinning, the yarn for weaving, etc. The average cost for each department is found by dividing the total cost by the production.

The fixed charges, such as fuel, freight, insurance, taxes, etc., must necessarily be averaged on some arbitrary plan. The department of the mill with the lowest capacity of production measures the production of that mill, and accordingly the production of that department is used as a basis for calculating the average of the fixed charges. As yarn can be and generally is, purchased to keep the looms running full, the weaving

department in most cases serves well for this purpose. The goods usually vary widely in the number of picks per inch and consequently in yards produced and this weaving product must, consequently, be reduced to an equivalent yardage with a constant number of picks per inch. Let us for illustration take 50 picks as a basis, with a product in a given month of 10,000 yards, averaging 40 picks per inch. The equivalent of this product in 50-pick goods would be 8,000 yards. If in another month the product should be 5,000 yards, averaging 80 picks per inch, the equivalent would again be 8,000 yards of 50-pick work. This reduction of the yardage makes the report much more valuable for comparing the operations of the mill during different periods.

When estimating the cost of any particular grade, we must figure the cost of each process through which the fabric passes. A good method consists in calculating the quantity of material which must pass through each of the necessary processes to produce one cut of the goods. For example, we find that a cut of cloth which measures 45 yards finished, may require 200 pounds of wool to be sorted, 70 pounds of clean wool to be colored, 100 pounds of stock to be picked, 250 runs of yarn to be spun, 55 yards of warp to be dressed, and 50 yards of cloth to be woven and finished. Each of these items is extended at the average cost of the process, fixed charges being calculated per woven yard of 50 picks per inch. The total of these items divided by 45 (yards of finished cloth

Cost Estimate of Woolen Cassimere.

15½ oz. per yd 4/4

2800 ends, 3/8 runs; 68" wide in loom, 50 pds. 3/8 runs

Stock shrinks 15% from clean wool to yarn

15% " yarn to finished goods.

21/10 oz. stock required for yard, 4.24 lb; .562 cost of stock

	Required per cut	Manufacturing Labor	Manufacturing Expense	Cost per cut Labor	Cost per cut Expense
Sorting	156 lbs	.004		.62	
Scouring	63 "	.0034		.21	
Coloring	63 "	.007	03	.44	1.89
Picking	63 "	.002	.003	.13	.19
Card. + Spin.	221 "	01	001	2.21	.22
Spool. + Beam	7 sec.	.056		.39	
Weaving Pr.	50 yds	.089		4.45	
Finishing	47 "	036	.023	1.69	1.08
Fixed	50 "	049	.042	2.35	2.10
				12.49	5.48

Cost Stock per yd .562

12.49 / 47 yds " Labor . . .266

Expense . . .116

5.48 / 47 Mill cost per 4/4 yd .944

FIG. 3.

per cut) will give the estimated cost per finished yard for labor and expense. If the cloth is made with a greater or less number of picks than 50, the average used for fixed charges is increased or diminished in corresponding proportion.

There is but one proof of the accuracy of any cost estimate. When an inventory is taken and mill accounts closed, the yardage of the various fabrics manufactured during the period should be extended at their estimated cost, and the total compared with the actual cost as shown by the statement of profit and loss.

Fig. 2 is a statement of the cost for fixed charges as indicated by Fig. 1, but reduced to a basis of 50 picks. The actual monthly production was 74,250 yards, 36 inches wide, 36 picks. As the goods were woven two widths in the loom the yardage was one-half this amount, or 37,125 yards, 36 picks per inch. Assuming these looms to have been operated with the same efficiency on a cloth having 50 instead of 36 picks per inch, a proportionately less yardage would result. A simple calculation gives 26,730 yards of 50-pick goods as the equivalent. As already explained, this reduction is made for the purpose of having a standard of production by which to calculate the average cost per yard of the so-called fixed charges, and by which to compare the product of different months. One yard of goods containing 50 picks per inch is the standard by which the work of the mill is measured and the efficiency of its operation determined.

Two important items of cost, interest and depreciation, do not appear in our statement, and have been omitted because they vary so widely among different mills. Care should be taken to allow for them in estimating the cost of goods.

Fig. 3 illustrates the method of estimating the cost of a particular fabric. This estimate was based upon the averages obtained from Figs. 1 and 2. The different items of cost are first placed in the left-hand column; in the next column appears opposite each item the material or work required for one cut. In the next two columns are the cost averages for labor and expense. The total cost per cut for each process is then extended and placed in the columns at the right. These items are then added and the totals taken as the estimated cost of labor and expense per cut.

The average cost per yard is found by dividing the total cost of raw stock, labor and expense by the finished yards per cut. These three items are in turn added and the result is the estimated mill cost of the fabric per yard.

SILK THROWING.

BY JAMES CHITTICK.

(Continued from May.)

In Europe also, and to a very limited extent here, the raw silk is given a cleaning preparatory to throwing. This is generally effected by passing the raw silk threads at a reasonable tension through thin slots in small metal plates. When a large lump or slug comes this will not pass through, and the thread stops there until the operator comes along and breaks off the imperfection, and starts the end going again. If a very fine place should come in the thread it would break under the strain, and the operator would then have a chance to pull off and remove this thin part. This cleaning process, under ordinary circumstances, will cost approximately 10 cents a pound; in many cases the money is well spent in view of the improved quantity and quality of the product, and in view of the fact also that it makes the throwing of the silk easier. If the throwster is asked to do it, however, he will charge for the process but makes no allowance on the cost of the throwing, and hence it is not much resorted to.

The length of skeins into which the thrown silk is reeled is arranged to suit the convenience of the customer. It has been found that for two-thread organzine, made of any sized silk up to 14/16 denier, a length of 20,000 yards to the skein is convenient, and for coarser sizes, such as 16/18 denier, a length of 10,000 yards. For tram in 4, 5, and 6 threads, 5,000 yards is a good length, while 2 and 3 thread tram may be reeled to 10,000 yards. If silk is to be used for very heavy weighting where its size will be greatly

increased, shorter skeins than usual are to be preferred.

It is desirable to have four crossings or tie bands, in each skein, carefully stitched in and carefully tied, with ample slackness to allow the silk to absorb its weighting without making these tie bands in any way tight upon it. In the reeling also great care should be taken to have a regular and quick traverse so that the crossings will be at a sharp angle and entirely regular.

Thrown silk, of course, is subject to its own defects. Some of these are due to irregular tension in the doubling or other processes, which would make tight and slack ends. Then there are cork-screw twists, loops, broken ends, missing ends from defective doubling irregular lengths of skeins, poor crossings, poorly put in tie bands, rancidity of the oil used, etc.

To ascertain the length per pound of a given size of silk, the following rule will be found convenient: Divide 4,465,000 yards by the number of deniers and the result will be the yards per pound. Thus a 13/15 denier silk is nominally supposed to run in size between the limits of 13 deniers and 15 deniers, and should not average finer than 13 1/2 deniers or coarser than 14 1/2 deniers. Taking the average of 14 deniers, and dividing as above, a length of over 319,000 yards per pound will be found. A 12/14 denier will have a greater number of yards, a 14/16 denier a less number, and so on.

An average cocoon filament may run in size from 2 to 3 deniers, so it is evident there is no such thing as a 1 denier silk, or even 2 or 3 denier silk as the single filament cannot be used by itself. As already stated a thread made by 3 cocoon filaments is about the finest that can be used. The 13/15 denier size, which is the size of greatest use, is generally composed of about 5 cocoon filaments.

If a 13/15 denier silk is to be thrown into organzine of 16-14 turns, it means that the individual thread must first have 16 turns of twist given it, and that then two of these twisted threads are to be doubled together and 14 turns of reverse twist given to them. It follows that the single thread will have a twist of 16 turns plus 1/2 of 14 turns, or 23 turns in all. Now 319,000 yards per pound, the length of a 14 denier silk, is over 180 miles long, so that a pound of it would reach in a continuous thread from New York to Philadelphia and back. Every inch of this great length would have to receive 23 turns, which would give the colossal amount of twist of over 264,000,000 turns for one pound. At a speed of 10,000 turns a minute, without allowing for an instant's stoppage for any reason, and for a working time of 55 hours a week, it would require 8 weeks for one spindle to twist up a single pound. This will make it clear that, for organzine spinning, a great many spinning spindles and a very great provision of power are prime necessaries.

It is obvious, of course, that in this twisting process there will be a take-up or shortening of the length of the silk. This will vary according to the conditions under which the silk is worked, and according to the thickness of the silk, the coarse sizes taking up more than the finer sizes.

Silk is of an elastic nature. It can be stretched and if processed under considerable tension, and if it were then allowed to remain set on the bobbins, it might not afterwards recover all of the stretch. This would compensate in part for the take up in the twist. This is likely to be the case if the silk is wound in the damp condition in which it comes from the hydro-extractor, as is sometimes done. Taking, however, average sizes of silk and average organzine twists, worked under ordinary conditions, it is fair to allow from 4 to 5 per cent. for loss in length from this cause. To make suitable allowance on the cost sheets for this take up is very necessary, for it really makes a material money difference, but many people quite overlook it.

In hard twist silks the take up is a serious matter and will vary much according to the nature and thickness of the silks and the twist given them. From 10 per cent. at 45 turns to 20 per cent. at 70 turns may represent a fair average. There is also an invisi-

ble loss in the weight of silk when it is twisted very hard. This hard twisting is expensive, one quotation before me being as follows: "Hard twist organzine 20/18 turns, $1.15; 40/36 turns, $1.60. Hard twist tram, 3 to 6 thread, 45 turns, $1.20; 75 turns, $1.70. Hard twist singles for chiffons, 13/15 deniers 60 turns, $2.30."

On account of the gums in the skeins it is always difficult, and generally impossible, to wind the silk satisfactorily as it is received, as it catches at each of the gummy places when the skein revolves. To soften these gums and so facilitate the winding of the silk, a soaking process is resorted to. Suitable tubs or tanks are provided in which the skeins of silk are immersed in a solution of warm water, soap and oil. The oil best suited for this purpose is good olive oil, while good quality neat's-foot oil is also very largely used. Some other oils, such as cocoanut oil, are employed, but they are very apt to become rancid in time, and for that and some other reasons they are not so desirable. Adulteration in the oils must be carefully watched for.

The best soap to employ is a first class quality of white or green olive-oil soap, and the water, while warm, should never be heated to a point where it will begin to discharge the natural gum of the thread. In using the richest and best qualities of soap and oil, a lesser quantity will naturally be required to do the work than would be the case if poor qualities were used.

The following is a good method of procedure: Tubs or tanks of a convenient size, say 25 to 30 inches square, and of the same depth, should be provided, with water and steam connections. Escape pipes should be of ample size. Fill the tubs about half full of water and then add of finely shaved white or green olive-oil soap about one per cent. of the weight of the silk to be soaked, and also about one pint of good olive oil. Heat this and let it get thoroughly mixed and the soap entirely dissolved. Lower the temperature to about 90° F. and put in the silk skeins well opened up. There should be water enough to entirely cover them. As they have a tendency to float they can be weighted down by a board cover which fits loosely inside the tub and which is covered with smooth copper on its lower surface so as to prevent any damage to the silk. On this lid weights can be placed. It is customary to soak silk over night, though so long a time is not necessary. The major portion of the soap and oil used is absorbed and retained by the silk.

(To be continued.)

ENGLISH NOTES.

(By Our Special Correspondent.)

Trade depression has left its impress on the profits of the textile trade combines. Fine Cotton Spinners, Ltd., finds its profit halved and the dividend falls from 12 to 8 per cent. Lancashire's seven weeks' lockout cost this $36,000,000 concern a sum in excess of half a million dollars. It cost the operatives' unions two and a half times as much and the good done by the obstinacy of the cardroom workers who caused the strike is still invisible.

The $34,000,000 Bleachers' Association congratulates itself that loss of profit on its financial year has been limited to about $5,000 a week. For the third time in history ordinary stock pays no dividend and the return has never been better than 4 per cent. From new works, re-equipments and a central repair shop the bleachers hope to make more money in future.

The $10,000,000 slubbing corporation, British Cotton and Wool Dyers, arrives at the year end with $100,000 less to credit than it began with. It set out in 1900 to pay 7 per cent., and the two dividends it has yielded have been 2 1/2 and 2. "Slubbers" have not yet solved the difficulty of controlling competition between their own branches and are much harrassed by rivals on the outside. The piece-dyeing combine, Bradford Dyers' Association, does much better and its renunciation last year of the agreement which bound customers to send the B. D. A. all, or nearly all, their work has had no perceptible effects on either side.

* * *

Non-actinic clothing for the tropics is not a new invention. These notes mentioned its

existence two or three years ago, since when "red-backs" have come more into tropical fashion. Actinic rays are the irritant ones which provoke ailments like prickly-heat, they are the blues and violets of the spectrum, the photographically active rays. They can be prevented from reaching the skin, or the sensitive photo plate by the interposition of a color-filter like the ruby glass or ruby curtain used in developing-room lamps.

The commonest non-actinic fabric is cotton khaki padded bright red on the underside. It is not easy to print red to show bright on so dark a foundation, but the work is done regularly in Lancashire. Non-

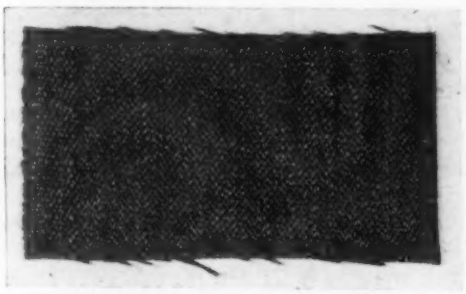


FIG. 1.

actinic knitted underwear, red and orange mixture, is heard of. With this note a patterm, Fig. 1, of non-actinic worsted venetian is sent to the Textile World Record office. The warp is grandrelle green and gold, the red filling is thrown on the back and shows on the front only faintly, giving the face a mixture khaki tone. The same effect is obtained in cotton and even white cotton ducks are now being made with a cardinal backing-weft. Several persons in this country are known to be interesting themselves in the non-actinic notion. (The sample can be seen at our Boston office.)

• • •

The manufacturers and piece-merchants of the Bradford Chamber of Commerce have been asked to say definitely whether it is understood by trade custom that worsted coatings when ordered to be of a certain weight shall be of that weight by themselves and without any addition of size, chemical or "other artificial method." Respondents avoid the question of trade custom and record the opinion of their meeting that such coatings should be given a natural finish only and that the practice of weighting worsteds is objectionable and should be discountenanced.

A stand made some years ago against the weighting of clays with size and minerals has had the effect of curtailing the use of them. Another and perhaps a worse evil—in the shape of grease-dyeing—has taken their place. The cloth goes out dyed and pressed but unscoured, for scouring means loss of weight, and ounces per yard are the index of value in these fabrics. Grease-dyed goods are principally exported and it is a marvel that anybody will stand the constant discharge of grease and color that is bound to come from them in hot climates. It is curious that neither question nor answer names grease and that all parties have not agreed to denounce unequivocally a system which brings discredit on worsted goods.

• • •

Cork-proofing has been in the air for some years back and a few thousands of Bradford capital are reported to have gone in the experiment. Goods waterproofed with cork are soon to make their public debut when more can be said of the efficiency of the process. Advance statements say that the cork is deprived of its resin and thus of its brittleness, is sliced into sheets finer than 1/250 of an inch thickness and is made to adhere to the fabric by simple pressure. It will be seen whether the cork sheeting is free from holes, durable in wear and beneficial to the draping of garments. Rain-proofers are for the present skeptical.

• • •

"One practice I always made when I was designing," says a worsted manufacturer in the best class of trade, "and I don't know how designers get along without doing

something like the same. Suppose I know—as we all do this time—that gray is to be the rage. I warped up gray in a pattern loom in all likely and unlikely combinations. Beginning two and two of white and black I exhausted the combinations up to certain numbers across the beam. I tied in all sorts of ends, put in all manner of fancy weaves and filling and out of a three or four-yard warp got perhaps three or four hundred patterns.

"There would be perhaps two or three novel or suggestive squares out of the whole and obtaining them paid for all the trouble. They were the kind of notion that could not possibly be laid hold of in any other way.

"No; there is no patent on the idea, but not all designers have the habit. Our own man hasn't, and would be better if he had. We had a batch of patterns down from London this morning and among them some cutely ingenious things. I knew on sight the method that had produced them. If the man had waited to think out these combinations the patterns would not have been made for years. Those styles were accidents, sir—intelligent accidents I call 'em—and before I am much older my designer shall experiment in the same way."

• • •

The latest addition to the fashion in gray worsted fancies lies in the overcheck. Taste is tired of blue and green and although gray can be made to carry almost any coloring, the best informed opinion favors dull reds and tans. Buyers do not want "windowpanes," so that overchecks for the present have to be faint and broken and well elongated. Perhaps the checking will grow more pronounced later. At any rate overchecks and their colors are counting as important points in the game.

• • •

White woolen and worsteds are a considerable line again this summer in dress fabrics and a finisher of large quantities tells how he gets them up. When the original color is poor and he is not too busy the routine is this: Scour, peroxide bleach, stove and scour again. The bleaching discharges more color, but only sulphur gives the requisite purity of white. So when one process has to be sacrificed to hurry or to low prices it is the most expensive one, the bleach, that has to go. He sorts out the worst pieces for which peroxide is imperative and bleaches only them.

My friend has a large white business which he has done his best to deserve and in freedom from claims for damages and stains the department is the most satisfactory in his possession. The result has not been attained without organization or without trouble. It means the converting of every man into a skilled workman who will look ahead and avoid mischiefs.

• • •

At preposterously low prices some advertising tailors offer guaranteed indigo serge suits. The indigo is the product of a former dyeing, for the serge is from pulled indigo rags. In the use of rags a smart advantage was secured when first the British army took to puttees, i. e., spiral leggings. These had to be khaki and manufacturers of the cloth were in unlimited trouble over shades and the permanence of the dye. It dawned on one manufacturer that the way out was to buy Government khaki rags. These had passed the test and with them as raw maternal the rest was easy. Until his competitors understood the position the originator of this procedure had a capital time.

• • •

The French law of 1837 established the meter as the only legal and permissible unit of measure in France and provided fines for infractions. Laws in 1851 and 1905 confirmed and extended the original Act and made it possible to imprison as well as to fine those who have in their places of business "false weights or measures or other incorrect appliances for weighing or measuring." It does not appear that any of the Lyons millionaires have been committed to jail yet, but several Lyons manufacturers have been fined. Inspectors have discovered on the premises of these black and

callous criminals flat measures 120 centimetres long with English yard and ell markings on the obverse. All are illegal. The extra 20 cm. are blasphemies and the yard and ell treacheries; yet Lyons manufacturers have the hardihood to defend them. They say that they are always being told to give export customers the measures they require and that measuring and folding in certain non-metric lengths is an indispensable condition of business. But the Lyons Bench has a tyranny to uphold and it will sacrifice the silk trade rather than the only legal system of measure. Consequently it has declined to give these miscreants the benefit of a "legitimate motives" clause in the Acts. The rascals must learn to love and respect the meter, though they have to go to convict stations to do it. Their friends abroad are quite acute enough to see that the metric system must be a beneficent one when all these measures are needed to enforce it.

• • •

Again from Spain evidence comes that the metric system can only be made absolute by compulsion. A royal order directs that no weighing machine or lever scale may bear any but metrical divisions. On any existing scales provided with more than one standard all but metrical divisions have to be obliterated. Otherwise the inspector will decline to test the appliance and the usual result of using untested scales will follow.

• • •

An accompanying pattern, Fig. 2, shows what becomes of the so-called "B. A. Britches"—the Argentine wools, off-skirted from fleeces sent to America, which Americans cannot afford under the tariff to import. "B. A." is of course Buenos Ayres, "Britches" signifies breech wool and the term indefinitely includes bellies, locks and pieces. It has been said previously that these American leavings have been offered promiscuously in Bradford at low prices and in large quantities. Bradford makes of them excellent ladies' cloakings in natural undyed color. They are spun coarse and woven loosely with faint checks and the all-wool hard-wearing fabric comes in at a price that competes easily with goods made from cotton and rags. (The sample can be seen at our Boston office.)

• • •

The Government's eye is on child-bearing women in factory employment and a return

FIG. 2.

showing the number of married women with the proportion of widows among them now proceeds. The medical history of the children born to these women in 1908 is being followed as far as the first year of life and will be published.

Cotton cardroom hands continue to complain of dust in card-grinding and stripping and to cry for compulsory dust removal plant. The medical officer of health of the weaving town Darwen speaks of the ill effects of fluff and dust on the health of carding operatives. Cardroom hands suffer from chest complaints in Darwen, as do winders; weavers do not and the difference is ascribed to humidity and ventilation. Size-room hands are extraordinarily healthy.

A Bradford doctor has made the astonishing statement that children were better cared for at home in the days before the Factory Acts. Mothers then kept even their six-year olds in a wage-earning condition of health. A professor who has studied the birth-rates in Lancashire and Yorkshire textile towns announces that in fifteen years,

unless change comes, we shall be in precisely the same position as to race-suicide as people in France.

• • •

Of 47 anthrax cases reported last year 18 occur in the wool, 10 in the horsehair industry, 13 in hide and skin handling and 6 in other trades. Two cases of anthrax infection in the heavy woolen, shoddy, area were particularly inquired into and with this result. The material handled did contain in the one case 5 per cent. of shoddy, but it contained 80 per cent. of a "dangerous" wool, East Indian. In the other the blend was of pulled and washed stockings and cow and calf hair. Thus from another scrutiny shoddy and rags emerge with an unblemished character; the same cannot be said of wool, mohair, hair and jute which have all been vehicles of infection.

• • •

A British consular report gives these as the average daily wages of the Lyons silk trade:

Tulle, men, $1.58 to $2, 10 hours a day.

Upholstery, men, 76 to 84 cents; women, 39 to 44 cents; children, 34 to 39 cents; master weavers, $1 to $1.39.

Trimmings, men, 80 cents; women, 44 cents.

The manufacture of upholstery and trimmings is carried on in small workshops and there is no legal limit to the working time.

CORRECTION.

In the answer to the question "A Print Cloth Mill" on page 134 of our June issue the cost of 125 looms at $60 each was incorrectly stated as $750 instead of $7,500. The total cost of the equipment should be $27,210.

The Korean grass used in the manufacture of grass cloth is grown very thickly and is usually cut the second or third year and after planting the roots. The grass reaches a height of 4 to 5 feet and with a proper start and under favorable conditions yields, it is roughly estimated, about 3,000 pounds to an area corresponding to an acre.

A STEAM POWER PLANT.

BY CANTERBURY.

A loss of efficiency in the boilers and engines may result from several causes, among which is the improper settings of boilers, high cost of the handling fuel, poor arrangement of piping, inexperienced help, the boiler feed water not properly heated and purified. The boiler settings may be poor with bricks fallen in allowing the heat to escape. Dirty tubes and accumulations of scale or mud are the greatest evils. These items alone have been known to raise the cost of fuel 12 and even 15 per cent. They are easily overcome by proper blowing and scraping and the occasional use of a boiler tube cleaner. A better preventive for hard scale, however, is the addition of something to the feed water to dissolve the scale so that it can be blown out through the mud drum. Great improvements have been made in blowers whereby they are permanently set in the brick work at the back of the boiler and can be operated without opening any doors, thereby making it possible to blow the tubes and not interfere with the steaming of the boiler.

In a mill that came under my observation it was the custom to blow the tubes from the front end every other day. They were burning hard coal screenings mixed with soft coal in a ratio of one in three, which gives very good results, but makes a large quantity of dirt. Blowers were installed and the tubes were blown three times a day and the same fuel used. The coal bill was reduced 4.85 per cent., making the blowers a 160 per cent. investment over the cost the first year.

The object of blowing boilers is to remove the sediment, broken scale and mud. This should be done every morning while getting up steam. The handling of the fuel is also important. A very handy and cheap way where hand firing is practiced is to have four wheel trucks with the truck bottom about even with the boiler door. This keeps the boiler floor clean and enables the firemen to coal the boiler quickly, thereby avoiding letting cold air into the furnace.

For mechanical stokers an endless belt conveyor is about the most economical method for handling the coal. At present mechanical stokers are advocated to a great extent and in some cases have shown as high as 16 per cent. saving over hand firing, but in other cases have shown a loss. The hand firing end of the question is an uncertain one. The man in immediate charge of the boilers is in the best position to determine whether the firing should be light or heavy and how often coal should be applied. Trouble generally results when the manager of the plant attempts to give directions regarding such details. A very good illustration of this came to my notice a short time ago. The salesman said he had a very good run of coal; the thermal units being so much, the per cent. of ash so much and added that to be fired economically the coal must be fired very light and often and be well dampened. They tried firing according to his direction, but failed to get the promised results. The salesman was notified and he said he would bring out a fireman to show them how to use the coal. During the two days the expert fireman had charge of the boilers, the steam went low enough to slow down both engines and there was 92,600 pounds of coal used. The next two days the master mechanic who had charge of the power plant followed his own method of firing. As a result there was 83,800 pounds of coal burned and the steam did not vary over six pounds either day. The engines were indicated six times each day and in the last two days indicated about one per cent. lighter than the first two days. After deducting one per cent. there is still a difference of 7,874 pounds, due to the change in the method of firing.

It pays fully as well to cover exhaust steam pipes going to the feed water heaters, and the feed water pipes that carry the hot water from the heater or economizer to the boiler, as it does to cover the live steam pipes. A large saving is often made by adding an economizer to utilize the hot gases and the heat that the boiler does not absorb, to heat the feed water. In many cases this otherwise waste heat is sufficient to heat water for manufacturing purposes and for the circulation pipes, if the plant is heated in that way. It is advisable to use part of the sections of the economizer to heat the feed water and use the balance for other purposes.

If the engines are indicated regularly, there is not much danger of there being any waste, providing repairs are made when the indicator card shows the need. In many plants where an indicator is not used there is a large amount of waste. A worn cylinder or leaky valves are very expensive things to let go and in the majority of cases the saving in one month would pay for the necessary repairs.

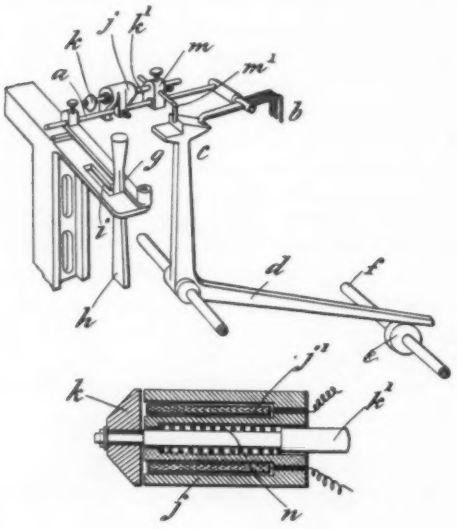
One more important item is lubrication, which in the course of a year amounts to quite a sum in a well regulated plant. The force feed and the gravity feed systems used in connection with a filter are a good paying investment.

A LOOM STOP MOTION.

An electric stop motion, invented in Scotland, has recently been patented in the United States and is described as follows: The stoppage of a loom is effected upon the breakage of a warp or filling thread or upon any occurrence that makes it necessary to stop the work. The motion consists essentially in an electromagnetic detent apparatus which is included in or controlled by such electric circuit and is particularly designed to be applied to existing looms without alteration. Accordingly, by the present invention the coil and the armature of an electromagnet are connected with the ordinary lever controlling the position, in its stepped slot, of the starting handle or shipper lever, preferably by being mounted upon the bar which carries the weft fork, and one or other corelated with a reciprocating part of the loom, such as the hammer or the reciprocating lathe, in such a way that during the normal working one part can be displaced with respect to the other by the movement of the said reciprocating part. When the electromagnet is sufficiently ener-

gized, both parts and with them the lever with which they are connected, are displaced by such movement and caused to disengage the driving mechanism and so stop the loom.

One form of the apparatus is shown in the perspective at Fig. 1. Fig. 2 is a longitudinal sectional view on an enlarged scale, showing electromagnet.



FIGS. 1 AND 2.

The bar, a, carries the weft fork, b, mounted at one end; c is the bell crank hammer which actuates the weft fork and which is driven, through the arm, d, from the cam, e, on the lower shaft, f, of the loom; g is the pivoted lever actuated by the bar, a, to stop the loom by displacing the shipper lever, h, into the elongated slot, i. All these parts are as commonly arranged.

The electromagnet, j, of the detent apparatus is secured on the bar, a, and the armature, k, is mounted to be moved freely along the bar, a, by the hammer, c. When the electric circuit which includes the magnet is closed, the armature, k, will be clamped magnetically to the bar, a, and the latter will therefore be moved on the forward stroke of the hammer or lathe to displace the shipper lever, h, from driving engagement and the loom will stop.

The electromagnet, j, as shown, is constructed of a cylinder of iron which is formed with an annulus to receive the energizing coil, j^1, and is bored to receive the spindle, k^1, of the spring-returned iron plate or cap armature, k. The spindle extends rearwardly through the magnet core and is secured adjustably to a block, m, which is mounted to slide along the bar, a, and engages the hammer, c, either directly or through an adjustable finger, m^1. A spring, n, is provided to return the armature and its spindle to the position in which they are shown in Fig. 2.

DRAFT AS APPLIED TO COTTON YARN PREPARATION MACHINERY.

BY BOLSTER.

Throughout the series of processes used in the manufacture of cotton yarn, from the picker to the spinning frame inclusive, there is an attentuating action (or a drawing out of the stock), being performed, with a view to reducing gradually the weight per yard delivered from each process.

The amount of reduction is dependent on the size or count of yarn to be produced, and each machine assists to some extent in attaining the desired result. The amount of attentuation effected by any machine is referred to as the "draft." For instance, if 24 yards of stock were fed into a machine in the same time as 144 yards were delivered, the draft of the machine would be equal to 144 divided by 24 or six. It must be remembered, however, that while the draft increases the length it decreases the weight per yard delivered.

To illustrate this, let us assume that each yard weighs 300 grains; or a total weight of 300×24 equals 7,200 grains for 24 yards fed into the machine. Assuming there is no loss as waste, 7,200 grains also equals the total weight delivered, but it is distributed over 144 yards in place of only 24 yards, making the weight per yard delivered equal to 7,200 divided by 144, or 50 grains per yard.

While the length delivered is six times

the length fed, the weight per yard delivered is only one-sixth of the weight per yard fed; therefore if for every yard fed, six yards are delivered, the machine is said to have a draft of six.

Draft represents the ratio between the surface speed of the delivery rolls, and the surface speed of the feed rolls of a machine; and the simplest method of finding the draft is to divide the length delivered by length fed in the same time. Or divide the weight per yard fed by the weight per yard delivered.

The following list gives the usual range of draft used on the various machines for cotton carding and spinning:

Bale Breaker (roller type)	30	to	40
Breaker Picker	1½	to	2½
Intermediate Picker with 4 laps fed	3½	to	4½
Finisher Picker with 4 laps fed	3¼	to	4¾
Revolving Flat Card	70	to	120
Drawing Frames with 6 or 8 ends fed	5	to	8½
Slubber	3	to	5
First Intermediate with 2 ends fed	3½	to	5½
Second Intermediate with 2 ends fed	4½	to	6½
Fine Roving or Jack Frame, 2 fed	5½	to	7
Ring Spinning Frame with 1 or 2 ends fed	7	to	12
Mule (roller draft) with 1 or 2 ends fed	8	to	14

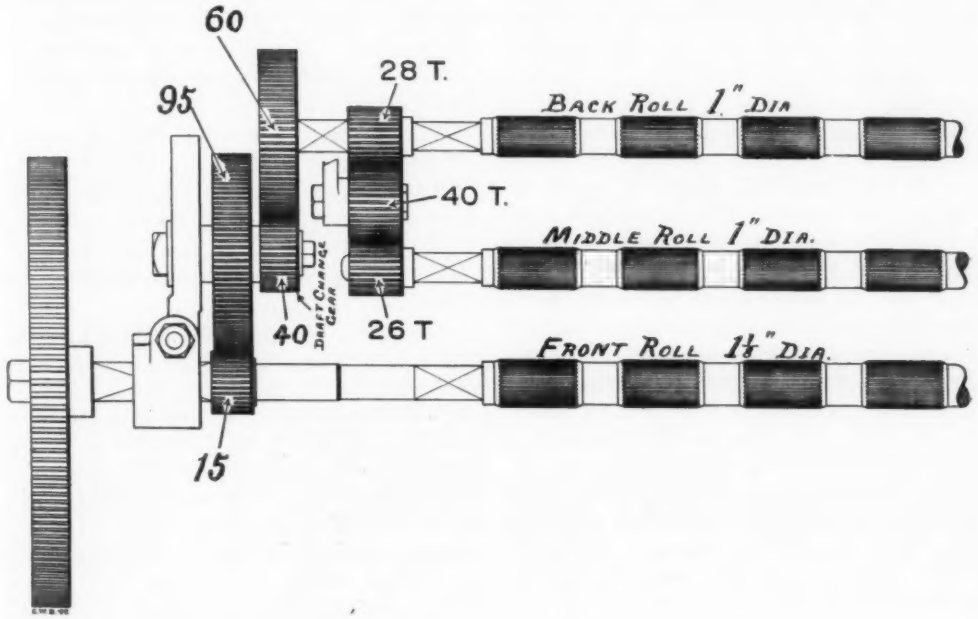


FIG. 1.

SPECIAL MACHINES FOR COMBED YARNS.

Sliver Lapper, with 12 to 18 ends fed	1½	to	3
Ribbon Lapper, 4 or 6 ends fed,	4	to	7
Comber, with 6 or 8 laps fed	20	to	35

On some of the modern combers now used for short cotton, the draft may reach 45 or 50 when 8 laps are fed.

TO CALCULATE DRAFT BY MEANS OF GEARING.

To find the draft of a machine by means of gears, pulleys, etc., apply the following rule:

Commence with gear on the back roll or feed roll as the first driver; then following

gears connecting feed rolls and delivery rolls; divide product of driving gears and diameter of delivery roll, by product of driven gears, and diameter of feed roll.

In practice, the back roll may not actually be the source of motion, but this is assumed in order to simplify the tracing of driving and driven gears, and may be used in the above manner in finding draft of any machine where draft is employed.

To regulate the draft on the various machines, a change gear is located at some convenient point in the train of gears connecting the feed rolls and the delivery rolls, and any change in the size, i. e., the number of teeth, will change the ratio of the two rolls, and therefore, the draft. Gears used for this purpose are known as "draft change gears."

Whenever it is necessary to find the draft of a machine, time and circumstances do not always permit the surface speed, or the length fed and delivered to be found, therefore, in practice it is customary to obtain what is termed a "draft constant" which can be used to obtain draft, or draft change gear as the case may require, without the necessity of performing a long calculation whenever a change is to be made.

When draft gears are calculated from gearing constants, an allowance must be made on fly frames and spinning machinery for the contraction of the stock through the introduction of twist.

Fig. 1 shows a diagram of gearing for 3 lines of drawing rolls, and illustrates the arrangement generally used on slubbers, intermediates, roving frames, ring spinning frames, and the cotton spinning mule. The size of the gears may vary on some of these machines to accommodate the range of draft and diameter of rolls. Usually the front roll is the actual source of motion through which the other rolls are driven, but this fact may be ignored and the 60 gear on the back roll be taken as the driving gear and imparting motion to the 40 draft change gear, which is on the same stud as the "crown gear" of 95 teeth, the latter meshing into the small gear of 15 teeth on the front or delivery roll; the diameter of the delivery roll is 1 1/8 inch, and the diameter of back or feed roll is 1 inch.

Applying the rule given, the draft of these rolls will be equal to $60 \times 95 \times 1\ 1/8 \div 40 \times 15 \times 1 = 10.69$.

To find the draft constant for the same rolls and gearing, proceed as above, but omit the draft change gear, thus:

$60 \times 95 \times 9/8 \div 1 \times 15 \times 8/8 = 427.5$ constant.

This is a constant dividend; therefore to find the gear to give a required draft, we must divide constant by draft required.

For example: What gear must be used to obtain a draft of 9 1/2?

Then constant (427.5) divided by (9.5) draft equals 45 gear.

Again, if we desire to know the draft any particular gear will give, divide constant by gear.

For example: What draft will a 50 draft gear give?

427.5 divided by 50 gear equals 8.55 draft.

As the draft calculations in carding and spinning room machinery are of considerable importance, the following additional explanation is given to show that if one will make himself familiar with the rule for figuring speeds, he will have no difficulty whatever in finding the draft, provided that he always assumes the feed roll to be driving the delivery rolls.

To illustrate this, let us use the diagram again, and find the speed of the front roll to one of the back roll or feed roll.

$$\frac{60}{40}\ \text{drives} \times \frac{95}{15}\ \text{drives} = 9.5$$

While the back roll makes one revolution the front roll makes 9.5 revolutions.

Then $9\ 1/2 \times 1\ 1/8$ inch $\times$ 3.1416 = inches delivered from front roll, and 1×1 inch $\times$ 3.1416 = inches fed in same time by back roll. As the draft equals inches delivered divided by inches fed in the same time, the draft in above case is:

$9\ 1/2 \times 1\ 1/8 \div 1 \times 1 = 10.69$ draft.

In the last portion of previous example 3,1416 used to find the two circumferences

cancel each other and are omitted, leaving the diameter of front roll with the driving gears in dividend, and the diameter of back roll in divisor with driven gears; while the 9 1/2 equals the ratio of speed.

By combining the two equations we obtain 60 × 95 × 1 1/8 inch ÷ 40 × 15 × 1 = 10.69 draft as given in last case.

The gear on the end of the front roll must never be with the diameter of front roll, and the gear on the feed roll must never be on same side of equation or with the diameter of feed roll.

While other rules may be used for obtaining draft, the above has been found to be more easily understood and applied in many cases and it will apply on any machine from picker room to spinning room where draft is used.

(To be continued.)

THE DRAFTING OF WORSTED.

BY JOHN BROWN.

In judging how much draft wool will stand in the drawing for worsted yarn several factors have to be taken into account. If we take the generally accepted standard that wool will always stand a draft equal to its length, allowances have to be made for the difference in the staples of various growths, and for the various proportions of long and short fibers contained in each. Taking the ordinary Bradford 60s as our standard, a staple top may have fibers 5 1/2, 5, 4, 3 and even 2 inches long.

Before combing (still working on the average of ordinary 60s) the draft in the Backwash Gill should not be more than 4 1/2 to 1; and in gilling operations before Noble combs, 5 to 1 in first gill and about 5 1/2 to 1 in second gill.

A good plan to determine what draft to use with a new lot is to dissect a few staples on a pulling board, Fig. 1. Then if a good diagram, Fig. 2, is obtained, draft to full extent. If a poor diagram is obtained, Fig. 3, showing a large proportion of short fibers, the draft should be shorter or the result will be uneven and twitty yarn.

To get a diagram, break off a piece of sliver from the top to test for the drawing. Or take an average pull from the sliver off the card to test for draft to be used in gilling before combing. Pressing one end of staple firmly on pulling board with thumb of left hand, draw the staple across board with right hand. The longest fibers will be laid on the board. Repeat this operation until nothing is left in the right hand. The diagram is then complete. The board should be covered with velvet which forms a fine surface for holding the fibers in position.

The quality of wool is determined by the

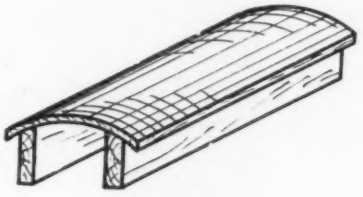


FIG. 1.

fineness or diameter of the fiber. This is misleading to some extent. The staple shown in Fig. 2 would easily spin to 60s count. Fig. 3, although equally as fine, would not make a satisfactory yarn if drawn to more than 50s.

It follows that good judgment must be used in drafting. In making up a drawing, tops of various qualities and lengths of staple are blended to make a standard. The object of drafting is to distribute the shorter fibers so that an even sliver or thread may be produced. It would be possible to set the front and back rollers of a machine so that top measuring 2 1/2 yards to the ounce could be drawn down to the thickness of roving at one operation, but it would be so uneven as to be practically useless. This is the reason why in drawing, from 8 to 10 or 11 processes are used, varying with the qualities of the material in hand.

If good work must be done one rule must be observed in all drafting operations from the time the wool leaves the card until it leaves the spinning frame or mule. The sliver must not travel in the same direction in any two consecutive operations. Previous to the introduction of the automatic

creel, all tops had to be unwound after leaving the comb before going through the first gill in drawing. The reason for this is that the ratch or distance between delivery and drawing rollers has always to be longer than even the longest fibers in the staple. Notwithstanding gills in early processes and carriers in the later ones there is always a danger of the shorter fibers being pulled through in a body with a tendency to make thin places. By turning the sliver at each operation most of this difficulty is overcome.

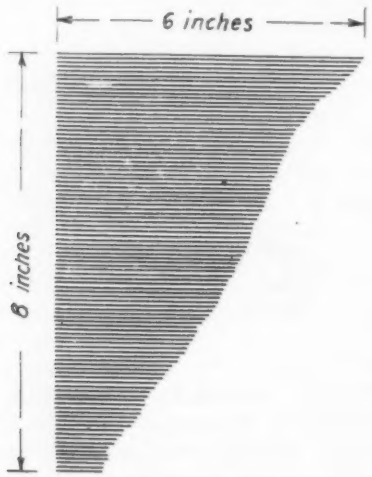


FIG. 2.

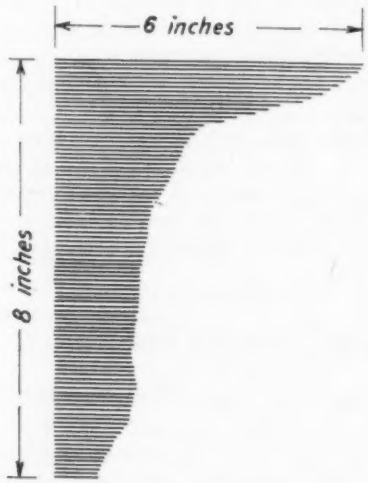


FIG. 3.

If the draft is too short in the early processes, the sliver when opened and held to the light has a dull, cloudy appearance. If too much draft is used the sliver shows decided unevenness, with thin and thick places, which can easily be detected by drawing the sliver through the hand.

The methods of regulating draft are all practically on one principle, i. e., the speeding up or slowing down of the front roller. In backwashing, gilling and finishing in the combing processes and in gill boxes in the early stages of drawing, the fallers set the pace and both delivery and drawing off are variable quantities. The back rollers in all these cases must be set at such a speed that the fallers have a slight lead. This needs careful watching, for, if the lead is not enough, the wool does not get well down into the pins, and some of it will ride over the points altogether. If, on the other hand, there is too much lead the fallers will disarrange the shorter fibers and bad sliver will be the result.

It must always be remembered that gilling is not a combing process; and that if the wool is not cleared in the comb itself, the subsequent operations cannot remedy that fault. In the later stages of drawing and spinning the speed of the cylinder is the fixed point and both draft and twist alterations are based on this speed.

As will be seen from Fig. 4, the bevel wheels on the back shaft driving faller screws are fixtures and determine the speed at which the fallers travel, while the wheels, A on the front roller side, and B on back roller side, Fig. 5, are easily changed. Whatever change is made the speed is relative to fallers.

By altering the size of wheel on low shaft (speed wheel) the fallers may be made to travel quicker or slower, but this makes no difference to the draft. Another point to be remembered in drafting, particularly in short, fine wools, is that in the case of gills the front roller should always be set as near to the faller as possible, except in processes just after backwashing, where if wool is de-

livered too damp there is danger of plucking.

In reducing, roving and spinning, where the front rollers are a fixture, the last set of carriers must be set as near the nip of the front roller as possible. The object is to hold the shorter fibers in staple or thread until the last moment so as to prevent its being dragged and so cause unevenness. Of

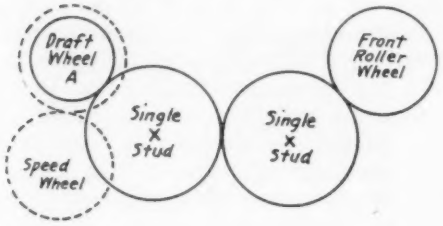


FIG. 4.

course the same rule holds good in boxes where porcupines are used in place of gills or carriers.

A good 60s giving a diagram like Fig. 2 will stand a draft of 6 all through the 10 processes of drawing, but always finish off with roving light enough to be able to spin with a low rather than too high a draft. Overdrafting in the spinning is an evil, and as this is the final process before passing into the piece the defect cannot be remedied. With a 6 draft allowance is made for alterations, either up or down, at the first and second weigh boxes and spinning frame.

When the count and the weight per ten yards of top are given, the number of processes and ends up at each operation may be determined by the amount of the draft the wool will stand. Thus if it is a poor short lot and will not stand over 5 draft and if the yarn is to be 60s, the number of ends put up in earlier processes will have to be reduced, resulting in reduced production.

If it is found on examining the sliver at any given box that it appears to be either over or underdrafted, and if the draft is not known, a simple method of getting the exact draft, which always varies slightly from the theoretical draft given by counts of wheels and size of rollers, is to mark off say one foot of sliver as it is being fed to back rollers, break the sliver off close to the front roller, then let the box run until the mark gets to back roller. If the amount delivered by the front roller is then carefully measured the exact draft is arrived at.

Then by a simple proportion the wheel required to give either a larger or smaller draft is easily determined. If a 20 change

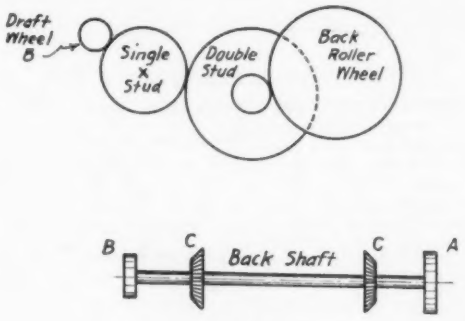


FIG. 5.

wheel on back shaft in gill boxes gives a draft of 4 to 1 and a draft of 5 is required, the new gear is easily calculated: $(20 \times 5) \div 4 = 25$ wheel required.

This saves calculating all the wheels and rollers in the box, assuming that the draft between faller and back roller is just sufficient to lay the wool well into the pins of fallers, an adjustment which, when once arrived at, does not need alteration except in extreme cases, as when changing from a lot that lays straight and even to a sort that is fluffy and springy, or the reverse.

To England and the Straits Settlement, with a population estimated at 300,000,000 people, England last year sold cotton goods amounting to $130,000,000, whereas, the total exports of cotton goods from the United States was $14,268,000, or less than England sold to Egypt.

American mills have little more than made a beginning in the sale of cotton goods during the year 1908, which are as follows: To China England sold 554,000,000 yards valued at $49,000,000. United States sold to China 50,000,000 yards valued at $3,166,000. To Japan the sales of England amounted to $10,000,000, and the sales of the United States only $20,000.

Questions and Answers

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring ,not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the composition of yarns, analysis of fabrics, etc., we will charge the enquirer with the cost of the investigation.

Yarn Count and Weight of Cloth.

Editor Textile World Record:

Please explain a quick way of calculating the weight per yard as well as the count of yarn for a given sample of worsted dress goods for men's wear. I remember there is a method of calculation in which the number 35 is a prominent factor, and which is very short. Straight Line (1097).

The method of calculation which "Straight Line" refers to has long been used for calculating the weight of worsted goods, 35 being a prominent factor or constant because the worsted count indicates the number of 35-yard lengths per ounce. The best way, however, of calculating the weight and yarn count for a given sample of worsted goods, best because the quickest and least liable to error, was explained in our June, 1908, issue in "A Talk on Textile Arithmetic" before the Lawrence Textile School. We have mailed a reprint of this "Talk" to "Straight Line."

The Cost of Shipping Textile Machinery.

Editor Textile World Record:

I should like some information regarding the cost of shipping cotton mill machinery from New England to Southern points. Is the rate the same from different New England points and does it make any difference whether a lot of machinery is shipped from one place or comes from different points? Warner (1078).

Stuart W. Cramer of Charlotte, N. C., who is agent for many textile machinery builders in the North and who is constantly making shipments to Southern mills, has compiled comprehensive data on this subject which answers the above inquiry as follows:

For the general information of Southern buyers it is perhaps well to mention that cotton mill machinery takes the same rates from practically all New England points. The classification is 6th Class Specific, and applies to cotton mill machinery peculiar to cotton mills, also to roving cans; in straight or mixed car loads released; minimum car load 20,000 pounds; does not apply on electrical machinery, engines, boilers, blowers, shafting or pulleys. For estimating purposes the rate can generally be taken at fifty cents per hundred pounds. Also it makes very little difference whether an order comes from one single shop, or is split up and comes from two or three different shops, for it will almost always happen that there will be at least one car load from each one of the different points, and anything over but still less than a car load can be billed with the full car at the same rate. Occasionally small shipments can be made to the machine shops and reshipped with the machinery to advantage; this practice is peculiarly the case in regard to roving cans,—at the same time, I question whether it pays, because the cans are often damaged in transit by being bruised or mashed out of round, too little to make a claim on the railroad for damages and yet enough to render their use more or less undesirable.

It is manifestly impracticable to attempt to give a schedule of the weight of different kinds of cotton mill machinery, as there are differences in weights peculiar to each builder, not to mention difference in weight according to specifications by the same builder. At the same time, as our customers have often asked for information as to the number of machines of each kind constituting a carload, I herewith append an approximate schedule as follows:

Picking Machinery. Generally three one-beater finishers, or three machines of like size.

Cards. Four 40 or 45-inch revolving top flat cards.

Sliver Lap Machines, Ribbon Lap Machines, Combers. Four 6-head combers, two sliver lap and two ribbon lap machines; or, ribbon lap machine in place of 6-head comber; all set up.

Four 8-head combers, boxed, make a car load; cannot ship them set up.

Drawing. Four 6-delivery heads, crated.

Slubbers, Intermediates, Roving and Jack Frames. Four frames are usually considered a car load, but if they are not too long, five can be squeezed into a large car; in the case of six, however, the shipment would be divided into two cars, as three machines will exceed the minimum car load rate.

Spinning, Twisters and Spoolers. Six frames of average length constitute a car load.

Reels. Fifteen to twenty, knocked down and boxed.

Cone Winders. Two machines of 100 spindles each, shipped in sections; the weight will be only 14,000 or 15,000 pounds, but it will pay to ship at minimum car load rate of 20,000 pounds.

Slashers. One standard slasher is usually shipped as a car load and must be placed on a flat car; sometimes in a shipment of say five slashers, the ten cylinders can be placed on two flat cars and the rest of the machinery in two box cars, thereby saving one car. The actual weight per machine is only 12,000 to 15,000 pounds, but it pays to bill it as a car load.

Warpers. Eight complete slasher warpers with creels; or six complete slasher warpers with creels and fifty beams; or twelve slasher warpers without creels; or six leese warpers complete with creels and ballers; or eight leese warpers including ballers without creels; or twenty beamers complete with tension ends.

Quillers. Four quillers set up; six or more boxed.

Looms. Twenty plain heavy pattern 40-inch looms; other sizes in proportion.

Cloth Room Machinery. Roughly speaking, two sets of cloth room machinery of average size for 40-inch goods constitute a car load, viz: Two sewing machines, two brushers with calender rolling machines, two folders, and two inspecting machines.

Presses. These are strictly matters of weight, as they are relatively very small and compact. It will generally pay to have a first class press billed as a car load, whether it weighs 20,000 pounds or not. The small and lighter machines, however, can best be shipped at actual weight, less than car loads.

Nappers. Two or three nappers.

Scoured Wool for Worsted.

Editor Textile World Record:

I find the following item in a recent issue of an English paper: "Piles of samples come every morning from Mazamet to Bradford, and the bids made to the agents are wired back to France for acceptance or refusal. Seldom do we topmakers pay all that the Roubaix scourers demand in the first instance." This would indicate that scoured wools are used for the manufacture of worsted in Europe. As we use grease wools almost exclusively in this country for worsted, I write to ask for further information on this point.

Topmaker (1091).

This question has been referred to our English correspondent who makes the following report:

This French skin wool is certainly used by combers. The trade in Mazamet wools is relatively of recent growth, say 10 to 15 years, and it runs up to some 25,000,000 pounds now. The shorter staple go for carded woolen and hosiery, the larger for worsted tops. I understand that it is usually blended with other sorts for topmaking.

Mazamet wool, I am told by Anglo-Canadian friends, is suitable for American cards and a lot of it is used now in the Canadian knit goods business. From returns at hand I see that $111,000 worth was imported into Canada in ten months of 1908. Our topmakers buy a considerable amount of scoured colonial wools. You will find in the wool catalogues scoured combing and scoured clothing varieties. Many claim that it is better to buy in the grease; that scouring, drying and repacking does not improve the wool from the user's point of view. By others this is denied, as they claim the wool is not injured if the scouring and drying is done properly. Apparently some prejudice against scoured wool has arisen from want

of care or skill on the scourer's part. At any rate something depends upon the way the preliminary treatment is done. Bradford does a good business in importing dirty, greasy Cape wools and exporting them in a finely scoured condition.

Wool arrives from Australia in both conditions and buyers take their choice. There is a good wool scouring industry in Australia, in which some fortunes have been made. Scouring reduces the bulk and hence the freight and it leaves the buyer knowing what the yield is and he puts his price accordingly. I am told that the "Americans have been behaving like lunatics" at the current London sales and paying twopence a pound more than other people for practically the same article. Traders seem to think that native optimism and the reaction from depression has something to do with the bidding. It is also supposed that the Americans will find they have paid too dear before their purchases are spun and woven.

Wessex.

Tying a Weaver's Knot.

Editor Textile World Record:

Will you explain the best method of tying a weaver's knot as applied to the winding of soft spun hosiery yarns running from 6s to 20s in size?

Weaver (1085).

The accompanying sketches show the method of tying a weaver's knot and also the common knot that is in nearly all cases used on winding and spooling machines.

FIG. 1.

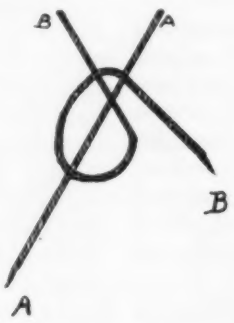


FIG. 2.

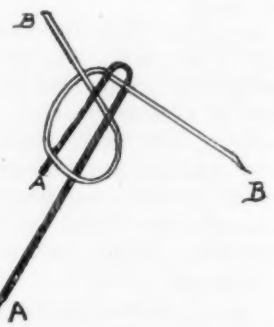


FIG. 3.

Fig. 1 shows two threads, A and B, which are first held at the crossing point by the forefinger and thumb of the left hand. Then taking hold of the lower end of B, carry it over the thumb of the left hand and around the back of the upper end of B, thence between B and A, as shown in Fig. 2. By means of the thumb of the right hand turn the upper end of A over B and hold same with thumb of left hand in position shown in Fig. 3, while with the right hand pull on the lower end of B until the knot is tight.

FIG. 4.

FIG. 5.

Fig. 4 shows a knot which is started as shown in Figs. 1 and 2, but instead of only passing B around its upper end, and then over A as shown in Fig. 3, the thread, B, after going over the left thumb passes around the back of both A and B at the point where they both cross, then between A and B; now turn down the upper end of A as before and pull tight on B.

Fig. 5 shows a common loop knot usually used by winders. In this case both threads are manipulated side by side as one thread by passing the ends, B, over the left thumb and then through the loop thus formed and then pulling tight.

There are several other knots which differ but slightly from those given. Bolster.

Manufacturing Buckram.

Editor Textile World Record:

We would like to get information regarding the manufacture of buckram, including the description of the cotton fabrics required and also the process of finishing. Buckram (1092).

The different kinds of material to which the name buckram is applied are many and various. The original buckram is a cloth woven with jute counting about 20 by 18 threads to the square inch. This is stiffened with dextrine or British gum to such a degree that it cracks or breaks if bent. Buckram is used extensively at the present time as a foundation or stiffening for the moulded or padded parts of garments. Cotton buckrams are woven in various grades and weight according to requirements. The tailoring trade requires it heavy enough to keep the garment in shape and it is thus necessary to have it heavily stiffened. The average cotton buckram has about 34 by 32 threads per square inch of coarse yarn. The material in an unfinished state is very absorbent and spongy. The goods are bleached before being colored.

Montrose.

Help Required for the French and Bradford Systems.

Editor Textile World Record:

How much help would be required to operate the following worsted yarn machinery on the Bradford and French systems respectively. Would this amount of machinery give an approximate production of 100 lbs. per hour of 2/40s yarn from a half blood staple top.

FRENCH SYSTEM.

1 Screw gill baller
1 First drawing frame
1 Second drawing frame
1 Third drawing frame
1 Reducing frame
1 Slubbing frame
1 Intermediate frame
1 Roving frame
2 Finishing roving frames
6 680-spindle mules.

BRADFORD SYSTEM.

1 Screw gill baller
1 Can gill box
1 2-spindle gill box
1 2-spindle drawing frame
1 4-spindle drawing frame
1 8-spindle drawing frame
2 8-spindle finisher frames
4 16-spindle roving frames
8 32-spindle dandy roving frames
12 200-spindle spinning frames.

Would we require just one-half of the number of spindles for twisting that we do for spinning? How much more yarn would be obtained by the French than by the Bradford system?

Bradford (1094).

In addition to overseer and helper for doing odd jobs the following help would be required for the French machinery:

	Operatives.
1st screw gill	1
1st and 2d drawing frame	1
3d and reducing frame	1
Slubbing	1
Intermediate	1
Roving	1
2 finishers	2
Total per set	8

Mules require:

1 mender
2 piecers
1 creeler.

This makes a total of 4 helpers for every 1,400 spindles.

The following help is required for the set of open drawing, Bradford system:

1st screw gill faller, 1 can gill box, 1 helper.

1-2 spindle gill box, 1-2 spindle drawing frame, 1 helper.

1-4 spindle drawing frame, 1-8 spindle drawing frame, 2-8 spindle Finishers' frame, 1 helper to these 4 boxes.

4-16 spindle Roving frame, 1 helper.

8-32 spindle Dandy roving frames, 2 helpers 4 boxes each.

The following help is required for twelve 200 spindle spinning frames:

2 end lappers to follow doffers
1 bobbin layer
1 bobbin taker off
2 creelers, to put rovings in 6 frames each, and clean carriers
1 jobber
1 nipper to sweep floor, etc.
9 piecers to mind 2 sides each

2 piecers to mind 3 sides each end of the room
5 doffers.

The French and Bradford drawing should each turn out 100 pounds per hour. Of course, much depends on the staple, as to what drafting the fibers will stand. The better the top the heavier the turn out.

It is not necessary to have one-half the number of spindles for twisting that is required for spinning. The number of twisting spindles depends on the count and the number of turns of twist. Five or at the most six twister frames of 140 spindles each should handle easily the output of 12-200 spindle spinning frames. This would require:

8 helpers (twisters)
1 bobbin layer
1 taker off
1 assistant overseer.

The advantage in weight turned off would certainly be in favor of the French system but no definite figures can be given. Always remember that the poorer the top, that is, the greater amount of short fibers, the greater will be the advantage of the French system. John Brown.

Ribbers for Hosiery.

Editor Textile World Record:

I want to make children's ribbed hosiery and should like to know who are the builders of the ribber that makes goods like the sample enclosed. You will notice that the welt is as perfect as the one made on the expensive flat machine.

Also kindly inform me what are the proper sizes for the ribber and number of needles for the following footers:

2¼-inch cylinder with 120 needles
2½-inch cylinder with 136 needles
2¾-inch cylinder with 148 needles
3 -inch cylinder with 160 needles
3¼-inch cylinder with 172 needles
3½-inch cylinder with 188 needles
3¾-inch cylinder with 200 needles

As you will see my machines are all fine gauge and correspond to 17 needles to the inch.
Revere (1093).

I would use a 4 1/2 inch ribber with 200 needle footer, 3 3/4 inches. The ribber should have 280 or 300 needles if a very fine hose is to be made. A 240 needle ribber 4 inches in diameter also makes a very nice hose. The number of needles and diameter of machine should correspond with the other footer. For example:

200 needle footer 240 rib
188 needle footer 228 rib
172 needle footer 212 rib
160 needle footer 200 rib

The rib frames must have a cylinder 1/4 inch larger than the footers. Atwood.

American and European Methods of Wool Carding.

Editor Textile World Record:

Please give me information on American methods of woolen carding, to cover the following points:

The cost of a set of woolen cards of good make.
Working of machine.
Production in 10 hours of 1, 2 and 3 runs.
Number of mule spindles supplied by card.
Necessary help to 5 sets of cards.
Number of spindles per operative in spinning room.
Wilson (987).

We published in our issues of November and December, 1907, several replies to this question and give below some additional letters bearing on the same question.

There is a great difference among carders as to the best kind of card, but to my mind the best for all kinds of work is one with the cylinder 48 inches wide and 60 inches in diameter, a self feed on the first and second breaker and finisher, two 12-inch doffers on the finisher and 31 rings on each doffer—one ring for spare end.

The production of a set of cards of this size will be about 450 pounds of 1 run yarn, 375 pounds of 2 run, and 325 pounds of 3 run. Some carders would do a little more and others not so much.

A set of cards of this size would cost about $3,500. If the shoddy was taken direct from the rag picker to mix with the cotton and wool it would be better to have a metallic breast on the first breaker, which would cost about $300 more.

This card would supply a 400-spindle mule and one operative will run the mule. To run five sets of cards would require an overseer, two card cleaners, three card tenders, and one picker man. Jefferson.

The cost of a set of good cards depends on the size and the number of cards in a set, whether three or four, and whether they are fitted with iron or wooden cylinders, etc. They may be purchased from $1,500 for a set of first and second breakers and finisher, 40-inch card, up to about $4,500 for a set of 60 by 60 with iron cylinders, strippers, workers, first and second breakers, and a double card finisher with Bramwell feed, balling head, creel, Apperly feed, and card clothing. These cards may be adapted for taking off either two spools of roving with 30 ends each, or 4 spools with 20 ends each. If on 1 run work the card would do better on the 2-spool card. On heavy work the ends would be apt to tie together a good deal on the 4-spool finisher on account of the rings being narrower. On 3 run work the 4-spool card is capable of a considerably larger production by reason of not having the extra card in the set, but in my opinion the extra card more than pays for itself in improving the work and it costs no more for labor to operate. There are several makes of good cards on the market, most of which are built in this way and it is economy for manufacturers to buy the best.

Assuming that the stock to be carded has been picked, oiled and cleaned properly and is brought to the cards in sheets, or better still, conveyed by a blower to a bin back of the card, which is cleaner and saves labor, it is ready for the feeder. This feeder weighs the stock and gives a uniform feed for the card and should be always carefully looked after by the carder and his assistants. It should be fed evenly the whole width of the feed box so the stock will rise evenly on the spike apron and should not be allowed to run too long without refilling, neither must it be overcrowded in the filling. In the feed box is a comb for brushing back the stock, preventing it going forward in bunches when the spike apron is in motion. This should be given careful attention, have a medium sweep and not set too high or run too fast when the stock is light and fluffy. It should be set so that when the feed box is filled with stock the teeth of the comb will be about half an inch from the teeth of the spike apron and the speed should be changed on different grades of stock. If it runs too fast on light and fluffy stock it will be apt to fan the stock back into the feed box and give uneven weight. The teeth of the spike apron should not be allowed to become bent or filled with short stock, dirt or grease. They need the same care in regard to the speed as the comb.

(To be continued.)

Wages in Knitting Mills.

Editor Textile World Record:

What are the working hours for a knitting mill, and how are the scale of wages counted? When we pay a weekly salary is it to be figured by so many hours a day or six working days? Is Saturday a full working day or only half a day? Also what is the average salary paid a circular machine knitter working on Brintons, Scott & Williams, and Stafford-Holt? Morefield (1082).

The price of labor and the gauge and quality of work vary so in the different localities that it would be impossible to give any set rate. I have paid all the way from 75 cents to $2.50 per day of 10 hours, according to price of labor at the time. The best operators are always the cheapest in the end, as they produce more, make less waste and cause a smaller percentage of needle breakage. To get at the real cost of knitting, the quality, quantity and needle breakage should be taken into account and the operator paid according to results obtained.

The best way to get at the labor cost of knitting is to calculate the cost per pound, which should run from 1/2 cent to 1 1/2 cents, including fixers' and overseers' wages. The overseers should be held responsible for the quality of the work, and should be allowed within reasonable limits to arrange the wages to suit conditions. No. 8 yarn on 8 to 1 inch needles should cost about 1/2 cent. No. 30 yarn on 14 to 1 inch needles should cost about 1 1/2 cents. Yarns and gauges can be calculated in proportion. All hands are paid by the hour, losing all time off, excepting possibly the overseers and very best fixers. Madison.

Of last year's cotton crop, our home consumption was 2,198,000 bales in Southern mills, and 2,030,000 in Northern mills.

KNITTING DEPARTMENT.

For Knitting Mill Machinery, Equipment and Supplies, see pages 236 to 253. Also Buyers' Index.

THE KNIT GOODS SITUATION.

The new spring selling season for 1910 has opened since our last writing and is now in full swing. Quite a number of buyers have visited the primary market and orders are being placed freely. These orders are larger and there are more of them than have been placed up to this time a year ago and we already learn of some manufacturers who claim to have all the business now that they can take care of for the present. It does not necessarily follow that these mills are sold up for the season by reason of the withdrawal of their lines, but it is quite certain that some of them have sold up to the limit of their yarn purchases and now find it will be necessary to pay advances for more material, and they are getting out of the market until the prices to be obtained for merchandise bear a better relation to the raw material prices. The price situation is difficult of explanation. From all sources of information that the jobber has, he learns that yarns of all descriptions are from one to two cents a pound higher than they were a year ago, but at the same time, manufacturers and agents are offering their production to him at last year's prices. True, there are some exceptions to this, as in case of the line of three taped goods that were sold last year at 57 1/2c., but are now being held at 60c., although in that same manufacturer's line are some numbers that are reduced 2 1/2c. per dozen.

In going through several lines of straight ribbed vests with buyers it is noticed that there is a strong tendency toward the plainer trimmed goods. The trade seems to have had enough of the wide fancy lace trimmings, wide lace yokes and gaudy effects and are taking in preference, those styles with plain mercerized trim or with pearl edge trim or narrow imitation of hand crochet, of which there are a great many numbers in the market at from 85c. to $1.00. In the better grades of straight vests, the trade are taking quite freely of those made with imitation oriental lace yokes. These are shown in a variety of patterns at $1.75 to $1.85.

The Lewis Jones Knitting Company announce that they have discontinued making ladies' shaped ribbed vests and pants for 1910 and are using the machinery to make ladies' combination suits and are offering a mercerized trim umbrella garment at $3.37 1/2 for ordinary and $3.50 for extra sizes, on which it is reported some large orders have been placed.

Combination suits in all grades became very scarce in the month of May and June and as a consequence, several manufacturers have added them to their lines for another year and some exceptionally attractive garments are being shown, and it is intimated by some of those who are interested that some manufacturers who are showing samples will have difficulty in producing the goods at the prices offered. This refers especially to the plain stitch suits being shown in the neighborhood of $3.50.

Buyers are showing a preference to plain stitch goods in all lines and shaped vests and pants are being offered made of plain cloth as low as $1.40 and some very excellent looking mercerized trimmed vests are being sold at $1.75 with torchon trimmed pants to match.

Men's balbriggan shirts and drawers to retail at 25c. and 50c. are being offered at practically last year's prices. We have learned of a few advances on 25c. grades of about 2 1/2 per cent., but on the other hand, we hear of other manufacturers having reduced their price about the same percentage. This has been done, not by changing the price or discount, but by adding a band front to the shirts and an extension strap to

the drawer, which means an increase in cost of fully the above mentioned amount.

Men's full combed Egyptian yarn balbriggans are being shown as low as $3.25 with hem tail shirts and bone button drawers, with 12 1/2c. additional for pearl buttton drawers, and with 25c. additional for looped rib tail on the shirts.

We note that for the coming season a number of manufacturers are showing men's balbriggan drawers with sewed on anklets and we have been given to understand that this means a difference in the cost of about 10c. per dozen which buyers are taking advantage of. It is claimed by many that this is preferable to a looped on anklet, inasmuch as a stitch may be broken when sewed on and only effect the one stitch, whereas, if the anklet is looped on and a stitch becomes broken, the whole anklet becomes loosened.

Fall business remains in about the same condition as existed at our last writing. There have been no changes in prices since then and little business has come forward. There is a feeling among jobbers, agents and manufacturers that the coming fall will witness a good demand for merchandise and all are looking forward to a very active business on knit underwear when the season opens.

HOSIERY.

There is apparently a satisfactory feeling on the part of most hosiery manufacturers in regard to the business for 1910. The selling season has been open for several weeks and while there has been no extraordinary demand for merchandise of any description, the manufacturers of the seamless lines claim to be taking a fair amount of business each week. Buyers are not plunging in any sense of the word, but are continuing a conservative policy adopted at the opening and placing their orders carefully.

The general impression is that stocks in the hands of jobbers and retailers are very low and that business of good volume is looked for. As to the price situation, quotations are the same as last year in most cases, but in some few instances, advances of 2 1/2c. per dozen are being asked and when the buyer comes to these conditions, he usually sidesteps and begins to look around for a substitute number.

Some of the larger and best known manufacturers of seamless goods claim to be in a position now to decline business for early delivery and those buyers who must have early deliveries are beginning to take more notice of the smaller makers who in many cases are asking slightly higher prices.

The full fashioned end of the business is almost at a standstill. However, these manufacturers are patiently marking time until the tariff question is settled and some buyers whom we have talked with seem to be under the impression that manufacturers of fashioned goods will have plenty of business, whether the Dingley rates are continued or the new advanced rate is put into effect.

Retailers report a very active June business. Tans and bronzes have been in good demand; in fact, all plain colors have been taken quite freely and blacks are by no means lagging behind. The past two weeks there has developed quite a call for ladies' white hose, which in most cases there has been no difficulty in taking care of, as we find many jobbers and retailers have a stock of white on hand. Tans and whites for children have had the call and tans especially have been very scarce all during the season.

Sizes of Hosiery.

Editor Textile World Record:

Will you publish the standard lengths of ribbed hosiery, cotton and woolen, in all sizes from 4 to 10 1/2 inches, measuring from bottom of heel to top of welt? Also state proper length of rib top on half hose and length of leg in sizes 9 1/2 to 11 1/2 inches? Adams (1088).

The standard lengths of ribbed hosiery from top of welt to the bottom of heel is as follows:

Sizes: 4, 4 1/2, 5, 5 1/2, 6, 6 1/2, 7, 7 1/2, 8, 8 1/2, 9, 9 1/2, 10, 10 1/2.

Inches: 12, 12, 15, 15, 18, 18, 21, 21, 24, 24, 27, 27, 29, 29.

On half hose the ribbed top should run 5 1/2 inches long for all sizes and the length of the leg without ribbed top should measure:

Sizes: 9 1/2, 10, 10 1/2, 11, 11 1/2.
Inches: 7 1/2, 8, 8 1/2, 9, 9 1/2.

Fillmore.

EQUIPMENT FOR A HOSIERY MILL.

BY ATWOOD.

For a hosiery mill making 900 dozen of boys' 2 by 1 and 1 by 1 ribbed hose per week a capital of not less than $20,000 will be necessary. The first step in building a mill is to build it large enough so that an increase in the production can be made. Fig. 1 shows the ground plan of a mill for a production of 1,800 dozen per week. The mill should be two stories high with a basement. The basement can be used for storing yarn and shipping goods. One floor can be used for the dyehouse and the engine and boiler room. It is well to have the dyehouse at least 5 feet from the main mill. Keep the dyehouse as near the boiler as possible as the largest amount of steam is used in this department. It is more economical to put in the best engine and boiler as well as a heater. The heater will pay for itself in the first year in the saving of fuel.

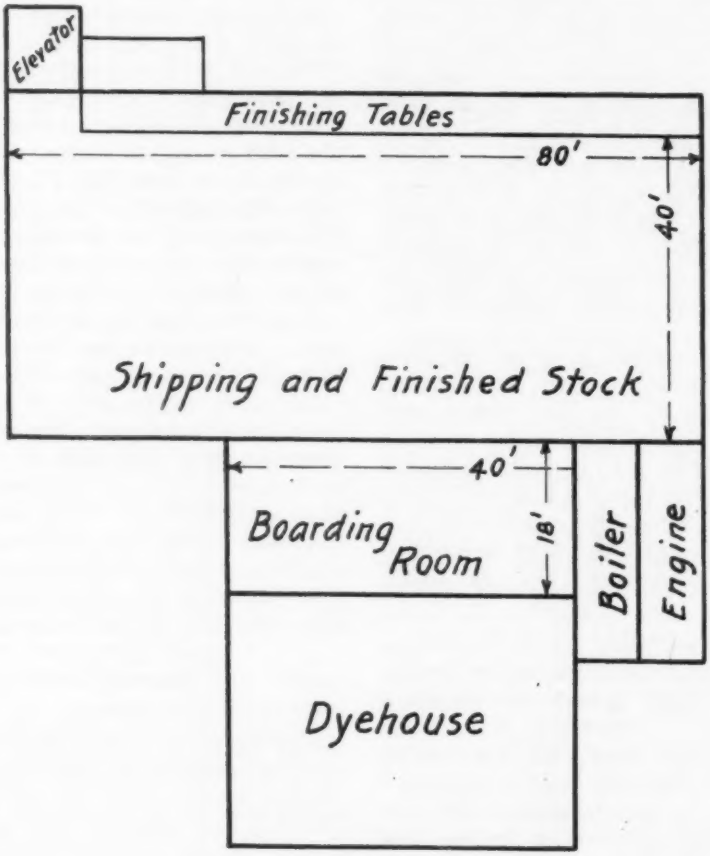


FIG. 1.

In arranging the machinery in the knitting room have everything as convenient for the knitters as possible. Locate the yarn, tops, oil, etc., near by and in that way the production and incidentally the wages of the operatives will be increased. For example, I had a line of loopers in our mill and the girls had to bring their own work half way

down the room. They were getting out only 35 dozen per day and making from $4 to $5 a week. I had the fixer give the girls the work morning and noon and now the same girls are looping 45 to 50 dozen per day and making from $6 to $7 per week. Before the change the girls were dissatisfied and it was hard to get help, but now we can get all the help we need as they can make as much in the hosiery mill as they can in any other mill. I adopted the same plan with the knitters. They had to go to one end of the room for yarn and tops. I took the yarn and tops and put them at each end of the room and divided the knitters, so that one-half of the help got their yarn from one end of the room, and the other half from the other end. By doing this the production was increased to 50 dozen a week.

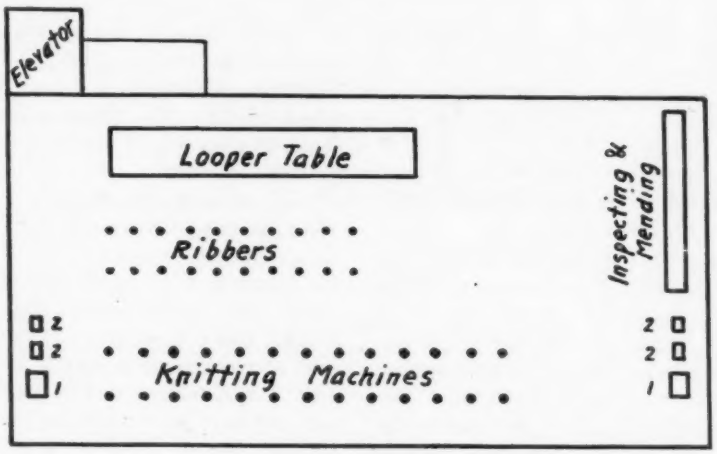


FIG. 2.

Fig. 2 shows the plan of the knitting room. The following machinery will be needed in this department:

Fifteen machines for footing, one, size 5; two, size 6; three, size 7; four, size 8; five, size 9; for medium grade hose.

One, size 5, 2¼ in. diam. = 96 needles.
Two, size 6, 2½ in. diam. = 104 needles.
Three, size 7, 2¾ in. diam. = 112 needles.
Four, size 8, 3 in. diam. = 120 needles.
Five, size 9, 3¼ in. diam. = 128 needles.

The size 9 machine can be used for the size 10 by adding to the foot changing chain. Twenty rib frames will be needed for the above machines:

One, size 5, 3¼ in. diam., 120 needles.
Two, size 6, 3½ in. diam., 128 needles.
Four, size 7, 3¾ in. diam., 136 needles.
Five, size 8, 4 in. diam., 148 needles.
Eight, size 9, 4¼ in. diam., 156 needles.

All the above ribbers are for 1 by 1 hose. If 2 by 1 hose is wanted an extra cylinder for machines cut accordingly is needed, or get the machines half 1 by 1 and half 2 by 1. Six loopers 16 points to the inch for the grade of goods to be manufactured will also be needed.

The tables in the finishing department extend the full length of the room. Closets and racks for stock goods must also be provided. The dyehouse has two oxidizing cages 10 by 6 ft. with two compartments each; one tom-tom for 100 pounds of goods; one laundry machine and two hydro-extractors. One hydro-extractor will do the work, but it is preferable to have two. One can be used for the goods as they come from the tom-tom and the other for the finished goods. More satisfactory results can be obtained by using two hydro-extractors as otherwise a competent dyer would have to be employed and this would not pay in a small mill. The man in charge of the boiler

can look after this department. For the boarding room there will be needed a hosiery dryer and a six drawer dryer of 500 dozen capacity.

The equipment of a hosiery mill should be of the best. A lot of small articles are needed such as wrenches, machinery tools, a small lathe, emery wheel, vises, shafting belts, etc. If half hose is to be manufactured the following machinery is necessary for a daily production of 150 dozen per day 200 needle hose:

Twenty knitting machines, 3 1/2 inches, diameter.

Ten knitting machines, 3 3/4 inches, diameter.

Ribbers for making tops 200 needles.

Seven machines, 3 inches, diameter.

Six loopers, 18 or 20 point.

THE OPERATION OF A BRAIDING PLANT.

BY ANTRIM.

The amount of machinery needed for the production of braided shoe laces, and other kindred lines of braids, to produce goods on an economical basis, requires an initial expenditure, seemingly out of all proportion, to the amount of goods produced. The capital varies with the kind of laces to be made. Laces are made on machines varying from 17 to 121 carriers. A 17 carrier machine can be bought for $19, whereas a braider with 121 carriers would cost about $150, and probably the 17 carrier will produce twice as many yards per week as the larger machine.

Machines in this country range between 32 and 52 carriers, three-quarters of the tubular machines having 44 carriers each. Machines for flat laces for women's and children's shoes ordinarily have 49, 53 or 61 carriers. Wider laces are produced on machines with 73, 81-97 or more carriers. These large machines are used chiefly in the manufacture of mercerized cotton and silk laces. Silk laces are made in larger quantities on 97 carrier machines.

The center of the domestic shoe lace industry lies in the Blackstone Valley in Rhode Island and the nearby towns of Massachusetts. The concentration of the shoe lace industry is probably due to the fact that the first braiding plant in the United States was put in operation there early in the last century, and is still in operation under the same name.

Providence, Pawtucket and Attleboro have each many plants for manufacturing shoe lacings alone, and the industry has spread in isolated cases to many of the surrounding towns, making this district within a few miles of Providence the home of fully three-fourths the total output in the United States. The New York and Brooklyn district comes next in respect to the number of establishments, but they are mostly confined to the higher grades of laces, such as silk, mercerized cotton and imported polished yarns. The Blackstone Valley product is almost wholly confined to the domestic polished cotton.

The economical running of a braiding plant, in conjunction with spinning, depends altogether on the size of the plant. Take for instance a 44 carrier braider on a good quality of domestic lace, that has a steady market the year round. It is made of 1/26s run two ends on a spool, 20 picks to the inch. A machine at 165 picks per minute will produce about 180 yards per day, requiring almost exactly one pound of cotton per day.

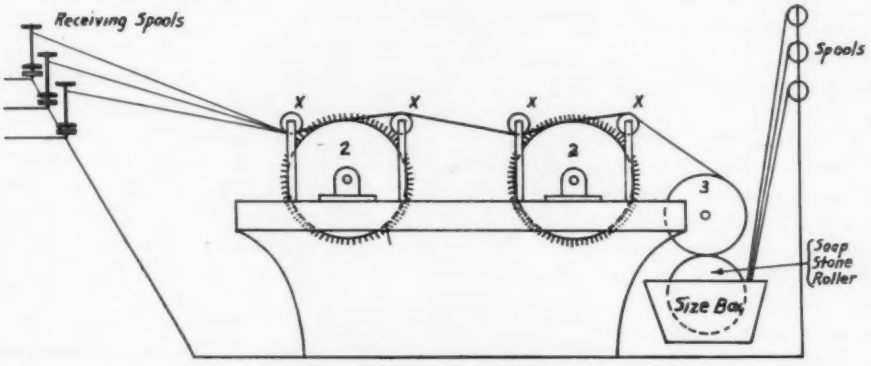
A braiding plant of 2,000 braiders is a pretty large establishment as braid plants go, and even at that we would only use 2,000 pounds of cotton yarn per day. This leads me to the conclusion that a spinning plant in connection with a shoe lace mill is not advisable.

A modern braid factory must be able to put any work on its braiders, from millinery to shoe lacings, and braids for other purposes, and cannot afford to tie up a lot of capital in machinery, from which it can expect no return. The yarn market will supply promptly any counts that may be called for in the skein, all ready for the dyer, and at a comparatively small profit to themselves. In the case of a braid mill it would be necessary to install a complete cotton spinning plant which could not possibly pro-

duce goods as economically as a larger plant. I am using at present myself 1/20s, 1/26s, and 2/26s, and buy in the open market.

The cotton yarn for braiding should be carefully tested before being dyed, should have about 13 1/2 turns to the inch on a 2/26s, a good warp twist on the single yarns. It is sent to the dye house, and here is where we generally strike our first snag. The cheap logwood dyes are used extensively in this trade. That is one of the chief differences between imported and domestic finished yarns. The logwood dye does not produce a true black, being generally of a bluish brown cast. If more attention were paid to the dyeing of a good deep black, as in the higher priced yarns, there would be less cause for complaint as to the shades of the finished product. I have had yarns sent in as black which had dark purple, green and brown in the same batch. If such yarns are allowed to go through, they will cause streaky laces.

As soon as a bag of yarn is opened, it is a good plan to examine it closely, as we frequently get a very harsh feeling lot, which runs very brittle on the winders, owing to insufficient rinsing at the dye house. There is always trouble with these hard yarns, until they are got through the polishing machines. I find the easiest way to overcome this, is to dampen the skeins overnight, and run it through quickly before it has time to dry again. A good skein winder should wind about 70 pounds per day of 1/26s, the cylinder of the winder running 100 revolutions per minute, with 24 spindles on each side. I find that 24 spindles are about all a girl can take care of and do her work right. The upright winder is used almost exclusively for coarse braid. The skein is placed on the top of the machine, and wound on to the spool on the side. The spools on these winders should be of the same size as on the dressing machines. It saves time and confusion in sorting. I use a 6-inch traverse and 3 1/2-inch head all through the winding and polishing departments.



X—GROVED ROLLERS FOR THREAD GUIDES. 2—CIRCULAR BRUSHES. 3—SOAP STONE ROLLER WITH A COVERING OF HEAVY FLANNEL TO SQUEEZE OUT SUPERFLUOUS LIQUOR.

It is one of the peculiar details of this trade, that American polishers of thread are so far behind the manufacturers of Germany and Belgium in the polish and feel that they impart to their yarns. The trouble with Americans, as in many other cases, is that we lose sight of quality in getting the quantity. The German method of polishing yarns consists in steeping the skeins in a preparation of size for some hours. They are then wrung out and put on a simple polishing frame, which consists of two heavy iron rolls, on which the yarn is hung. The top roll is driven, and the lower one is allowed to rest its weight on the skein itself, giving a good tension on the yarn all through the process, and being driven by

the skeins, which are driven by the top roller. While the skeins are revolving, they are constantly brushed by a large circular soft bristle brush the length of the machine. Just before the skein is dry, the finishing wax is applied, and the brushing and waxing are continued until each skein is finished.

The American method of polishing yarns consists in winding the thread from the skein before polishing, placing it in the creel of machine, then running the thread into the sizing preparation, and between two heavy soapstone rollers having a layer of heavy flannel on each roller to facilitate the squeezing of the moisture out of the thread, and to give a better grip on the thread and an even tension. The general run of polishing machines have 98 spindles each. Ninety-eight ends or threads are placed in an upright creel, and then transferred through the size and over two revolving brushes to the creel on the other side of machine. The quicker the yarn is transferred from one to the other, the better pleased is everyone concerned.

I run my dressing machines to give about 9 ounces production per spindle per day, the speed of the feed rollers being 12 to 13 turns per minute. This varies considerably in different mills. I have heard of feed roll running 19 to 21 turns, giving a production of 75 pounds daily. It is well to take such statements with a grain of salt. The faster the thread moves over the brushes, the less polishing it will get. I average my brush speed at 350 revolutions per minute with a diameter of 18 inches, giving a surface speed of 1,500 to 1,600 feet per minute. As the surface contact of thread with brush is only about 9 inches on each brush, Fig. 1, this shows the importance of not running the thread too fast.

Another impediment to faster running is the fact that the yarn must be dry before it is wound on the receiving spool. The speed of delivery must be set to have the yarn dry, or else the whole spool will be glued together.

The temperature of some polishing rooms is kept well above 100° F. in order to dry the yarn quickly. I find that fast speed impairs the finish and polish of the yarn, whether the temperature of the room is 85° or 105°.

A good dresser tender on single or double yarns below 30s can take care of 3 machines if the production is about 50 to 55 pounds per day. Above that, I find it better to reduce the number of machines to two.

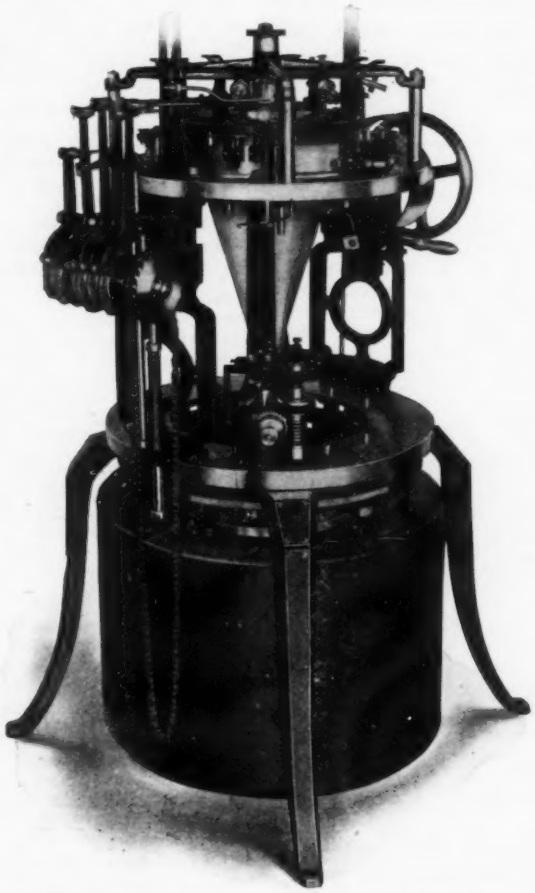
The polish depends largely on the polisher himself. If he keeps a good tension on his threads he will produce a fair polish, while a slack band will destroy the polish. A good tension on the yarn is the main requirement. If that is well looked after, there will not be much trouble in getting a fair polish. By the German system each skein is polished separately by hand and then is wound singly on spools. We sacrifice quality to quantity, and when we want to make a lace composed of two threads in each strand, instead of polishing each separately, and then doubling them in the spooling room, the American practice is to put up a double creel on the polisher, and to run two threads through each eye, doubling the weight of the yarn produced at the dresser. Then it is that the trouble begins. As the two threads go over the brushes, side by side, they carry over double the amount of moisture to the same amount of brush surface. The inside surface of the yarn is hardly touched by the brushes, and the outside looks fairly well until it lays on the spool a while. When rewound for the braider, the polish is gone. The slight amount of dampness carried between the threads is responsible for the polish not being there, as naturally it just soaks through the whole thread again. When the braid is made the finish is slaty, and not at all what it ought to be. If the speed of the thread is reduced the result is a wearing away of the surface of the size, making a hairy thread. The right way is to dress the thread singly, and double on a Barmen spooler. These spoolers will double up to nine ply.

(To be continued.)

During the year 1906-07 the quantity of raw cotton exported from India was about 369,830 tons, valued at nearly 70 millions of dollars. The principal buyers were Japan, Germany and Belgium.

FULL AUTOMATIC SWEATER MACHINE.

The illustration shows the new Wildman full automatic sweater machine. This is fitted with six distinct changes of stitch and is shown equipped with improved take-up which operates wholly on the principle of gravity, controlled by compound levers and sensitive friction, providing even tension on the fabric under all conditions. This new take-up may be applied to all plain and automatic body sweater machines; the parts are so arranged that they are readily interchanged with the old form of take-up on machines now in use.



THE WILDMAN FULL AUTOMATIC SWEATER MACHINE.

The Wildman Mfg. Co., Norristown, Pa., have recently published a new fully illustrated and descriptive catalogue showing their entire line of circular rib knitting machinery, stop motions, full automatic sweater machines, electric cloth cutter, etc.

Finishing Hosiery.

Editor Textile World Record:

What is the best method for finishing mercerized hosiery? Would you recommend a hot or cold pressing or a combination of both?

Sampson (1076).

Mercerized hosiery should not be allowed to remain around the mill for any length of time, or tied up in bundles, as this will cause creases which no amount of pressing will take out. When the goods are dyed and well extracted they should be boarded at

once, otherwise the stockings will not show the luster they would if boarded while damp. They are boarded and dried in a steam press or cyclone drier. If proper care is taken the dryer will not injure the delicate shades as much as is the case from coming in direct contact with the iron in the steam press. The goods are then mended and placed between card boards and put in a hot press which has hollow plates. The steam is turned on for an hour, after which let the stockings cool before taking out. Avoid too much heat as this is bad for the shades.

Henry Nevis.

KNITTING MILL NEWS.

New Mills.

*Indiana, Fort Wayne. The Old Fork Knitting Co. has been incorporated with capital stock of $200,000. R. P. Hinman, A. D. White, D. N. Foster, and others, are the incorporators. This refers to the proposed new knitting plant in which D. N. Foster and R. P. Hinman were reported interested, and it probably will result in the removal of the Hinman Knitting Co.'s plant from Decatur, Ill., to this place.

Massachusetts, Needham Heights. John T. Wye has started a number of knitting machines on gloves, and states that he has orders ahead for the next five months.

*Massachusetts, Taunton. New machinery has arrived for the Whittenton Hosiery Co.

*Minnesota, Fergus Falls. The new knitting plant, which we reported would be organized under the style of the Fergus Falls Knitting Works, has begun manufacturing with four knitting machines and two sewing machines, producing woolen stockings, sweater coats, underwear, and petticoats, using 3/16s to 2/20s wool and worsted yarn. Iver J. Boyum is president; M. O. Hellem is treasurer, and M. B. Hanson is agent and buyer.

Minnesota, Minneapolis. H. H. Bach, 731 Adams St., N. E., formerly connected with the Inland Knitting Co., will start a small knitting mill.

Minnesota, Minneapolis. The Eckert Knitting Co., Inc., has been granted a charter with capital stock of $10,000 to manufacture sweaters and a general line of knit goods. Elmer L., O. P. and Fred Eckert are the incorporators.

New Hampshire, Laconia. G. E. Stevens is starting in the manufacture of hosiery, and has several machines in operation.

*New York, Buffalo. While complete equipment has not been received for the branch plant here of the Monarch Knitting Co., Dunnville, Canada, manufacturing has been started. The business will be financed from Dunnville.

*New York, Elmira. A knitting factory will be located in Elmira by the Ironwear Hosiery Co., recently reported incorporated with capital stock of $10,000. The Elmira Hosiery Co., which some publications have reported, refers to the Ironwear Hosiery Co. The incorporators are Edgar G. Crowell, Carmi Lattin and Charles S. Lattin of the law firm of Lattin & Mills.

*North Carolina, Asheville. Machinery is arriving for the Acme Hosiery Mills. O. R. Cox is in charge.

*North Carolina, Burlington. The Elizabeth Hosiery Co. will be incorporated with capital stock of $25,000. E. H. Murray will be president and treasurer, and James W. Boland, manager. Twenty knitting machines have been purchased, and will be installed in the building on Mendenhall St., recently reported leased by them.

*North Carolina, Morrisville. S. R. Horn, previously mentioned in connection with the establishment of a hosiery mill, plans to erect a one-story wooden building, 32 by 120 ft., and install 100 knitting machines. It is probable this number will not be purchased at the start. A 15 h. p. gasoline engine will be installed to supply power.

North Carolina, Tarboro. Frank Powell, Jr., and J. M. Dixon have started a hosiery mill here under the name of the P. D. Mfg. Co.

*Ohio, Byesville. The Snag Proof Hosiery Co. has begun the manufacture of men's half hose, dyeing and finishing their product. The plant is operated by steam power.

Pennsylvania, Lehighton. Walter Drumheller and Charles A. Hauk are arranging for the starting up of a plant for the manufacture of cotton underwear in this town. The plant will contain 15 knitters, which are now being set up ready for operation.

Pennsylvania, Norristown. William T. Tonner, operating a mill at North Wales, Pa., on women's seamless and rib top cotton hosiery with 50 knitters, 2 sewing machines and 3 ribbers, is starting up a branch mill at this place in which he is installing 40 knitters.

*Pennsylvania, Parkerford. A new knitting factory will be located here by S. Clouse & Son, who recently started construction work on the factory building. Manufacturing will be started about August 1 with 6 Geo. D. Mayo knitting machines, making 176-needle cotton half hose. The plant will be operated by steam power. Officers have not been elected nor the business incorporated, but the company will have capital stock of $5,000. Sylvester Clouse is buyer.

*Pennsylvania, Pottstown. J. Daunt Clemons, recently reported as to start a hosiery plant, has leased quarters at 10 North Washington St., and will soon begin manufacturing.

Pennsylvania, Rittersville. A new knitting plant is being started here by Hildebrand & Co. Machinery equipment is being received.

*Rhode Island, Providence. In March a report

was given of a new company to manufacture silk hosiery. It was stated that the company would organize under the style of the Rhode Island Silk Hosiery Co. Organization has been completed, and the name of the company is the Providence Silk Hosiery Co. The capital stock is $35,000. J. T. Johnson is president; A. P. Weightman, treasurer, and John A. Staton, superintendent. The factory will be located in the building of the Providence Belting Co., and four machines have been ordered. Men's and ladies' silk hosiery will be made, manufacturing being started in June. The product will be sold direct.

*Tennessee, Nashville. The Hartford Hosiery Mills, for which application for a charter was made several days ago, will locate near the state prison, and will employ convicts under a lease from the state.

Enlargements and Improvements.

Alabama, Anniston. No change is contemplated for the present by the Anniston Knitting Mills Co. other than in the location, as reported. Their new quarters give ample space for greatly enlarging the equipment, and this will eventually be done.

Canada, Ontario, Hamilton. Preparations are being made by the Zimmerman Mfg. Co., Ltd., to enlarge its mill. Men's, women's, and children's balbriggan and merino underwear is manufactured.

Connecticut, Bristol. During the summer two brick additions will be built for N. L. Birge & Sons Co. One 2-story addition, 24 by 64 ft., will be located in the rear of the plant, and one 4-story building, 35 by 60 ft., will be located in front of the plant. Construction work will be started during July.

Delaware, Wilmington. The new dye house of the Glen Hosiery Co. is now equipped and in operation. The plant has a capacity of 1,200 pounds per day and is being run on fast black. It is also the intention of the company to put in 32 new knitters which have been ordered and are expected at the mill any day. The company has a capital of $100,000; Clarence Prettyman, president, and Charles B. Prettyman, treasurer.; and are operating 108 knitters and 12 ribbers on half hose and women's seamless hosiery, which they sell direct.

*Georgia, Rome. The Rome Hosiery Mills are removing into their new building on which construction work was started last December.

Illinois, Chicago. The Schefner Knitting Mills are operating a plant at 140 Washburn Ave. on all kinds of sweaters and sweater coats for men, ladies and boys, both plaited and all-wool goods. They have 12 knitting machines, 6 sewing machines, and 2 automatic winders. The product is sold direct. They buy 2/16s, 4/16s worsted, 2/20s wool, and single 12s cotton. E. Schefner is buyer. Next October the plant will be enlarged.

*Massachusetts, Wakefield. No information can be given at present regarding the equipment for the new mill to be erected for the Harvard Knitting Mills. The addition will be built on No. 1 Mill, and is to be 3 stories high, 139 ft. long, and 67 ft. wide.

New Jersey, Camden. The Merrimac Manufacturing Co., formerly at 95 and 97 Federal St., where they manufactured ladies' Swiss ribbed underwear on 10 knitters, have removed their plant to the three-story brick building at West and Senate Sts. They are working day and night in an effort to turn out their orders and will increase their equipment to 50 machines. The plant is run by electricity. It is also their intention to take in an adjoining building which they will use for storage purposes. G. E. Nye is the superintendent.

New York, St. Johnsville. A new building, 80 by 110 ft., will be built for the Royal Gem Mills Co., giving facilities for doubling the present equipment.

*Pennsylvania, Coopersburg. The buildings of the Gabriel Hosiery Mills are being rebuilt. The knitting department has been started up and the dye works will soon be in operation. This work is being done by outside parties.

*Pennsylvania, Hazelton. About August 1, the addition under construction for some time for the Hazel Knitting Mill Co. will be completed. The present capacity will be increased about 50 per cent.

Pennsylvania, Philadelphia. The Wallace Wilson Hosiery Co. are arranging for the building of an extension to their present plant on Orchard St., Frankford. The new building will be 48.2 by 185 ft. There will also be two rear additions each 20 by 39 and 41 by 84 ft. The cost will be $37,000. They are manufacturers of seamless half hose and children's and infants' hosiery of cotton, worsted, silk and merino yarns, operating 450 knitters, and 130 ribbers, selling their production through New York.

Pennsylvania, Philadelphia. Messrs. Mathias Bros. have started up a small knitting plant at Emerald St. and Erie Ave., where they are manufacturing ladies' fine seamless 240-needle cotton, lisle and mercerized hosiery with 6 knitters, 1 looper and 1 sewing machine, selling the production direct through their office at 589 Bourse Bldg. They have in contemplation an increase in the size of the plant and are negotiating for prices on new knitters.

Pennsylvania, Philadelphia. The Roxboro Hosiery Mills, 2011 E. Arizona St., of which Maddock & Wolstencroft are the proprietors, have recently put in additional machines for making a line of infants' seamless hosiery, samples of which are now out consisting of an attractive line of mercerized goods. They are manufacturers of men's seamless half hose on which they operate 10 knitters, 10 ribbers, 7 loopers and 12 embroidering machines. They finish, and sell the product through their office in the Bourse Bldg. and in New York.

*Pennsylvania, Reading. As suggested in an early report, the Continental Hosiery Mills, re-

cently incorporated with capital stock of $15,000, takes over the plant operated under the same name at 601 North Tenth St. Mathew A. Klusewitz is president and treasurer; Peter G. Klusewitz, agent; and John Webster Gehris, superintendent and buyer. Women's hosiery is manufactured on 80 knitting and three sewing machines. They use 14s to 40 yarns. Some improvements are being made to the plant.

*Pennsylvania, Reading. Kuersten & Rick, who purchased the Wood St. plant of the Reading Hosiery Co., will begin manufacturing there during July. Their capacity will be increased from 1,500 to 2,000 dozen daily.

Rhode Island, Providence. A permit has been obtained by Geo. E. Boyden & Co. to build an addition to their hosiery plant on Borden St., of brick construction, 5 stories high, 50 by 160 ft.

*Tennessee, Rockwood. When improvements at the Rockwood Mills are completed they will have 150 ribbers and 100 footers. The capital stock is now $100,000. J. F. Tarwater, is president; James A. Huff, superintendent; and Garnett Andrews, buyer. The plant is operated by steam power, and the product is dyed and finished and sold through Bacon & Co., 92 Franklin St., New York.

Mills Starting Up.

Iowa, Shenandoah. The Shenandoah Knitting Mills, which has been idle for some months, will be reopened under the name of the Shenandoah Hosiery Mills, and a company has been organized under this title with capital stock of $25,000. J. J. Dunnegan is president, J. J. Reddy, vice-president and general manager, and B. V. Cole, secretary.

Mills Shutting Down.

New Jersey, Camden. The Nelson Manufacturing Co., 516-18-20 Point St., which started up about a year ago for the manufacture of fancy knit goods, bathing suits, eiderdowns, etc., has been shut down. It is not known when it will be started up again.

Pennsylvania, Philadelphia. The Logan Hosiery Mills, Jasper and York Sts., manufacturers of women's seamless cotton hosiery on 30 knitters, have shut down their plant and are offering it for sale. It will not be started up again.

Facts and Gossip.

Canada, Ontario, Carleton Place. The Waterloo Knitting Co., Ltd., will be liquidated.

Illinois, Milford. It is reported that the Schwartz Knitting Mills have been leased and will be operated by the Marinette Knitting Mills, Marinette, Wis. For the present they will continue manufacturing in Milford, but will arrange within a few months for the removal of the plant to Marinette, Wis.

Massachusetts, Ipswich. The directors of the Ipswich Mills have voted to increase the capital stock from $400,000 to $500,000, and have made an offer to purchase the entire property and assets of the Gilmanton Mills of Belmont, N. H. Amory A. Lawrence is president, and P. M. Reynolds is treasurer of both concerns.

*Massachusetts, Ipswich. Reports that enlargements are being made to the Brown Stocking Co. are incorrect.

Michigan, Detroit. The Specialty Knitting Works have been incorporated with capital stock of $15,000 by John N. Anhut, president, and Charles L. Richardot, treasurer. The new corporation succeeds to the business of the company of the same name, which operates a manufacturing plant at 601 Sixth St.

New Hampshire, Laconia. A new corporation has been organized under the style of the Belknap Mills Corporation, which will take over, among other property, the business carried on under the firm name of J. P. Morin & Co. J. P. Morin is treasurer and manager of the new corporation.

New Jersey, Riverside. It is reported that William F. Taubel will remove the machinery from his branch mill in Shamokin, Pa., to this town and consolidate it with his main factory.

New York, Amsterdam. The Shaughnessy Knitting Mills, M. G. Shaughnessy, proprietor, are looking for a better location for their plant and if proper inducements are offered, such as exemption from taxation and other attractive features, the company stands ready to offer employment to 200 hands.

New York, Richfield Springs. The Waiontha Textile Co. has been incorporated with capital stock of $250,000 by Quentin McAdam, Wm. J. Baker, Utica, and Charles B. Rogers, of Clinton. The new company will operate the Waiontha Knitting Co.'s plant, which was purchased some time ago by Quentin McAdam and W. J. Baker, as reported.

*North Carolina, High Point. J. H. Tate will organize a company to build the hosiery knitting mill being promoted by him.

Ohio, Piqua. The Imperial Underwear Co. has been incorporated with capital stock of $50,000. They will have a special union suit manufactured for them by the Stuart-Brown Underwear Co.

Pennsylvania, Hamburg. The Keystone Knitting Mills recently purchased by Philadelphia parties at the receiver's sale, has again been sold. The new purchasers, it is reported, will re-equip the bleachery with machinery for dyeing purposes and again start up the knitting department.

Pennsylvania, Philadelphia. The Reliable Knitting Machine & Mill Supply Co., of which Howard W. Harley is the agent, are removing from their present quarters at 2515 Germantown Ave., to 539-41 Diamond St., where they have secured more room in which to handle the various appliances for use in knitting mills, for which they are noted among the trade.

Pennsylvania, Philadelphia. F. E. Lack, previ-

ously reported as purchasing a large interest in the Wisdom Hosiery Mills, Paducah, Kentucky, and Mr. Phillips of the Wisdom Hosiery Mills, are interested in the Southern Textile Machinery Co., which recently opened offices in this city. It is reported they are about to place orders for a large amount of new machinery to be installed in the mill at Paducah.

Pennsylvania, Philadelphia. David Greer, located at Kensington Ave. and Ontario St., in the Lee Hosiery Mills, whose lease expires July 1, has secured quarters in the Milne Mills at 11th and Washington Ave., where he is now removing. He is manufacturing cotton worsteds and dress goods on 90 narrow looms, selling the production direct.

Pennsylvania, Philadelphia. The Achuff Knitting Mills are applying for a charter with Samuel Achuff, Mary E. Achuff and Robert P. Achuff, as incorporators. They are manufacturers of children's cotton ribbed derby underwear, with 30 knitters and 45 sewing machines, their plant being located at Kensington Ave. and Huntingdon Sts.

Pennsylvania, Philadelphia. Harry Nelke, proprietor of the Elk Knitting Mills, located in the Fretz Bldg., 10th and Diamond Sts., manufacturers of women's and children's ribbed underwear, has purchased the 3-story factory building at the northwest corner of 10th and Norris Sts. The purchase price is not given.

Pennsylvania, Philadelphia. Flynn & Kelley are doubling the size of their Peerless Bleach Works on Elizabeth St., below Unity, Frankford, by the erection of a new two-story brick building, 40 by 40 feet, which they will equip for the finishing of towels and storage purposes. They are bleachers of cotton, woolen and linen fabrics and hosiery and knit goods.

Pennsylvania, Philadelphia. The Miller Waste Manufacturing Co., now at 1930-32 East Westmoreland St., report that they have leased the buildings at 2406-8 North Mascher St., in which they will remove within a few days.

Pennsylvania, Philadelphia. Benjamin O. Race has purchased the lot at the S. E. corner of Hancock and Somerset Sts., measuring 92.6 by 200 ft., for a nominal consideration, subject to a mortgage of $13,000. The lot adjoins the building operated by the Star & Crescent Mills and will be used by Mr. Race for the building of a new mill into which the Manchester Finishing Works, of which he is the president, will remove as soon as finished, the particulars of which we recently published.

*Pennsylvania, Philadelphia. William A. Hettrick & Bro., recently reported by us as about to give up the manufacture of hosiery in this city, are removing their machinery to Walhalla, S. C., where they are consolidating with a knitting mill located in that town. Messrs. Hettrick in addition to having an interest in the business, will also manage the plant, the production of which will be sold through Chas. Chipman & Sons in New York.

Pennsylvania, Reading. The Continental Hosiery Mills have been incorporated by Mathew A. and Peter G. Klusewitz, J. Webster Gehris and John G. Dersch. It is understood the new corporation takes over the business of the same name at 601 N. 10th St.

Pennsylvania, South Bethlehem. It is reported that the Bell Knitting Co., 590 Broadway, New York, will lease a building at this place and will begin manufacturing with about 100 hands.

*Rhode Island, Thornton. In regard to the contemplated change of location for the British Hosiery Co., we are advised that this is something that will probably happen for a part of the plant some time next year. For at least several months the entire plant will be located at Thornton.

South Carolina, Branchville. A. S. Duke of this place is interested in establishing a mill to manufacture men's and ladies' hosiery, and would like information on necessary equipment.

*Wisconsin, Milwaukee. Carl Penner has been elected president and treasurer of the Milwaukee Hosiery Co., which was recently granted a charter with capital stock of $25,000, and succeeds to the business of the Milwaukee Hosiery Co. at 69 Ogden Ave. No changes will be made in the plant for the present.

Personals.

Walter G. Eberley has been promoted to the position of superintendent at the Utica Knitting Company's branch mill at Oriskany Falls, N. Y.

G. W. Sheeley has accepted a position as overseer of knitting at the Mankato Mills, Mankato, Minn. He comes from Clinton, Ontario, Canada.

H. E. Birkhead of Beverly, N. J., formerly with the Continental Dye Works, Philadelphia, is now employed by the Glenn Hosiery Company, Wilmington, Del., where has has charge of the new dye house recently installed by them.

J. M. Allen has accepted the position as superintendent of the Utica Hosiery Company, Utica, N. Y. He formerly held this position and comes from the Chattanooga Knitting Mills, Chattanooga, Tenn.

Geo. W. Bicknel has accepted the position as overseer of knitting at the Lancaster Knitting Company, Lancaster, Pa. He was formerly employed at the Gotham Underwear Company, Reading, Pa.

Edward Davenport, Jr., has accepted a position as overseer of dyeing at the Wallace & Smith Blanket Mills, La Porte, Ind. He was formerly employed at the Wayne Knitting Company, Fort Wayne, Ind., and succeeds Thomas Sumner.

John F. Burrans has severed his connection as overseer of carding at the American Hosiery Company, New Britain, Conn.

Thomas J. Fox has accepted the position as overseer of knitting at the Riverside Hosiery Mills, Manchester, N. H.

New Machinery and Processes.

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market. The idea being to present to our readers a systematic monthly record of new machinery etc., of interest to textile mill m en.
We invite machine builders and others to send us such information for this department.

Dresser Tension Indicator. The T. J. Sands Mfg. Co., Winooski, Vt. An attachment for dressing frames, which indicate the tension on the yarn and thus enables the dresser tender to keep the uniform tension and reduce the evil of section marks in the goods.

Adjustable Beam Head. The T. J. Sands Mfg. Co., Winooski, Vt., are placing on the market an adjustable head for loom beams, a description of which appears in this issue.

Finishing Compound. Schoeller Bros., 3301 North Amber St., Philadelphia, are putting on the market a finishing compound called Brilliantone, for hosiery, piece goods, yarn, etc. It acts upon the dye and the fabric. Among the points of superiority claimed for it are that it develops blacks and colors into level bloomy shades, giving the fabric a fine lustrous finish and handle. Used on hosiery it gives soft yarn a look like lisle. The rusty flat look frequently noted in poorly dyed sulphur and direct blacks is claimed to be overcome by its use and the color developed into a full rich bloomy black and that finish acquired upon pressing is superior for hosiery and on piece goods after calendering.

A Split Drum Winding Frame. Arundel & Co., Stockport, England. An improved winding frame which it is claimed maintains a more uniform tension on the yarn than has heretofore been possible. It is adapted for winding from hanks, spools or bobbins.

Woolen Condenser. The Chadwick Machine Co., Cleckheaton, England. An improved condenser for woolen finisher cards which embodies many improvements in construction. Designed to secure more efficient condensing of the sliver and a greater facility in cleaning and repairing the machine.

A Stop Motion for Spinning Frames. Albert Koechlin, Muelhausen, Germany. A stop motion by which the upper delivery roll is raised when a thread breaks.

Plush Cutter. Otto Benner, Barmen, Germany. An attachment for cutting the pile on looms weaving double plush. It is claimed that this attachment gives much greater stability and accuracy than has heretofore been possible in cutting the pile.

Ribbon Loom Shuttle. Gustav Halbach, Ronsdorf, Germany. An improved shuttle for narrow fabric looms.

Circular Loom. Sakichi Toyoda, Shimasaki-Cho, Japan. A circular loom of which the feature is the method of forming the shed.

Artificial Silk. Xaver Eschalier, Villeurbanne, France. A process for increasing the strength of artificial silk and similar filaments.

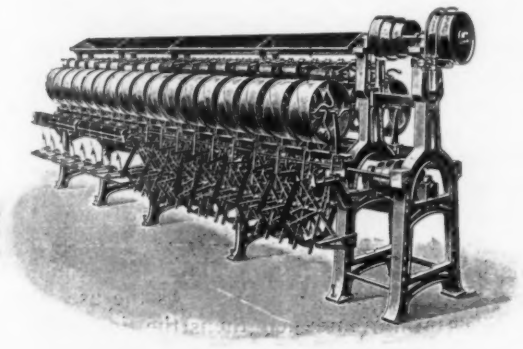
Mercerizing Knit Goods. Max Wueschmann, Chemnitz, Germany. A machine for mercerizing knit goods in the roll. There have been persistent attempts for a number of years to accomplish this result, but little progress has been made owing to the inherent difficulty of the problem. It is stated that very good work is done by the Wueschmann machine.

Quill Winder. S. Russell & Sons, Leicester, England, are putting on the market a new model of their quill winder which embodies several improvements.

Dobby Motion. James Hill & Son, Keighley, England. An improved double dobby adapted for either worsted or cotton looms. It has been especially designed for high speed.

A SLIT DRUM WINDER.

The illustration shows a new model slit drum winder built in Germany and sold in this country by A. W. Buhlman, 487 Broadway, New York. It is designed for winding silk, schappe, artificial silk, cotton, wool, jute, linen and mohair yarns. The thread runs from the cops or the swift through the grooves on the surface of a large drum, fifteen inches in diameter, to the paper tube. The drum revolves at a high speed and the groove acts as a thread guide and lays the yarn so as to produce a cylindrical or conical cross wound spool. The drums are made of specially prepared tinned strap iron. They do not come in contact with oil, so



A SLIT DRUM WINDER.

that yarn of delicate shades may be wound without injury to the color. The spindles holding the paper tubes are pivoted and when the spool is wound, one end is released and the spool removed without taking the spindle out of its bearings, which prevents any confusion through getting the spindles in the wrong place and any damage to the spindle head.

The machine is built for variable speed and requires about one h. p. per 100 drums. It is built with 20, 40, 60, 80, 100 and 120 drums arranged one-half on each side.

The advantages claimed for the drum winder are, first, high speed due to the large diameter of the drum. This gives large production. Another advantage claimed is that with the drum system, when a spool is started the drum is at a standstill and is set in motion slowly, getting its normal speed gradually and producing no sudden strain or tension on the yarn, whereas in the case of a spool driven by a shaft making 1,500 revolutions per minute, the speed of the spool is taken on so suddenly that frequently the thread is cut and the yarn wasted. Noiseless operation is guaranteed. It is claimed for the crosswise wound spool that the yarn runs off better, no sticking of the thread and no trouble in finding the end.

STEEL LOCKERS FOR TEXTILE MILLS.

Textile manufacturers will be interested in the steel lockers shown in the accompanying illustration and manufactured by the Federal Steel Fixture Co., W. S. Williamson, manager, 123 Liberty St., New York. These lockers have been adopted by many factories in different parts of the country and have given excellent satisfaction, being durable and economical in respect to space and first cost.

The superiority of steel over all other forms of locker construction is acknowledged both from a sanitary standpoint and as a safeguard against fire, filth, vermin and contagion. Architects and fire underwriters are specifying them and physicians are recommending them. The Federal steel locker has all the desirable features of the individual wardrobe combining security, privacy, exclusion of dust and dirt, perfect ventilation and sanitation, convenient interior fittings, neat construction, and a fine enamel finish.

These lockers are made by special machinery and are interchangeable so that the arrangement and placing of the lockers can be very readily altered and the equipment made to grow with your requirements. The lockers are designed so that they can be shipped "knocked down," which effects a material saving in cost. They can be readily and quickly set up by anyone, requiring only a wrench and screw driver to do the work. The sides and backs are made solid, thus preventing the spread of odors, vermin or con-

tagion from one locker to another, and clean clothes cannot come in contact with wet or dirty garments in adjoining compartments. The material is impervious to microbes and vermin as the smooth enamel surface can be readily cleaned and disinfected without injury.

The "open to inspection" feature of the expanded metal locker is especially useful where employers have found it best to know what the locker contains. They are made in every combination desired. While this particular type does not protect against dust and dirt, the open mesh cannot be spread and the contents pilfered as in the old style wire locker. The expanded metal is made in one piece. The makers will submit estimates or furnish suggestions for any contemplated installation. They manufacture in addition to the lockers, filling cabinets for all purposes, steel shelving, especially adapted for bleachers, finishers, storerooms, warehouses and dye houses of textile mills. The steel shelving is especially valuable in dye houses, as it greatly reduces the fire risk. Attention is also called to all metal stools with hardwood seat, made by the same company. These are light, strong and practically indestructible and the price is low.

A NEW SKIVING MACHINE.

The J. S. Turner Mfg. Co., Lowell, Mass., has recently perfected and received patents for a new skiving machine to be used in the manufacture of belts and belting. A novice can operate the machine, whereas formerly it took long experience to do satisfactory work.

The new machine is run entirely by power and is adjusted mechanically, whereas the old fashioned skiving machine is operated by hand power and the adjustment must be made by hand. The new machine will handle all sorts of belting from the hardest and stiffest to the softest and most elastic,—India or oak-tanned leather belting, mineral-tanned belting, mineral-tanned apron leather, and dark, greasy English-tanned apron leather being shaved to a point with equal facility and accuracy. The machine adjusts itself to any thickness of leather, and belting of any width or any length of lap can be skived.

A SAVER OF GAS AND ELECTRICITY.

The U. S. Gutta Percha Paint Co., Providence, R. I., is mixing a special paint for use in mills that is claimed to effect great economies in artificial light expenses.

This paint, called "Rice's Mill White," can be applied to any wall or ceiling, whether of wood, metal, stone, brick, or concrete, and makes an ideal permanent coating.

Owing to its peculiar light-reflecting properties it throws light from walls and ceilings to the ordinarily dark corners and recesses of large rooms. Therefore, where it is used, less artificial light is needed throughout the day and the general lights need not be turned on so early as would otherwise be necessary.

Of course, employers understand that the better light their employes have, the more satisfied they will be, and the more able they will be to turn out satisfactory work. Weavers often object to taking looms in dark parts of the room, claiming they can't get off the same production. As the use of "Rice's Mill White" lengthens the time that natural light may be used it helps both employe and employer, aside from its obvious economy in reducing gas or electricity bills.

"Rice's Mill White" not only has great light-reflecting property but on account of its hard and glossy finish it can be washed and cleaned when necessary without injury to its surface. This can be done so often as to frequently save the cost of repainting that would be necessary were it not washable.

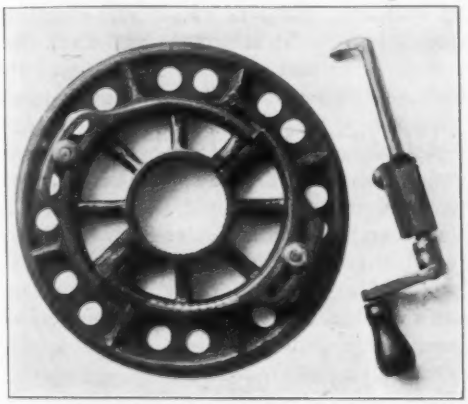
Dust does not adhere to "Rice's Mill White," and it is claimed two coats of it will cover new wood better in every way than three coats of lead and oil.

The manufacturers will send one gallon of "Rice's Mill White" free to any mill owner willing to pay the expressage and give it a fair test.

Many large and representative corporations are using it and testify to its benefits and economy.

AN ADJUSTABLE HEAD FOR LOOM BEAMS.

The ordinary false head on loom beams is a constant source of difficulty to weavers and fixers and it is to provide means for overcoming these well known difficulties that the T. J. Sands Mfg. Co., Winooski, Vt., are placing on the market the loom beam head shown in the accompanying illustration. It is tightened on the beam without the use of collars, set screws or blocks. It is claimed that when tightened it is necessarily square with the beam and held firmly in place. It is easily adjusted and can



AN ADJUSTABLE HEAD FOR LOOM BEAMS.

be put on without taking the beam apart. The manufacturers of this head are so confident of its merits that they are ready to send sample heads to any mill in the United States on thirty days' approval. When ordering the diameter of the beam and of the head should be given.

A thin ring-shaped body flat on one face is provided on the inner edge of the head with two cam faces. Within the ring and fitting the cam faces are two wedging cams. The inner edges of the cams are shaped to fit the beam and these edges have a saw tooth edge to give a firm hold on the beam. Springs are provided which separate the two cam wedges and hold them in contact with the cam faces.

The loom beams are provided on their ends with an enlargement, and it is important on a removable beam head that it may be capable of being placed on or removed from the beam by passing over this pulley or enlargement without the necessity of removing the same from the beam. To this end the opening in the ring body which receives the cam is made sufficiently large to allow the ring to pass over the pulley. After being so placed the cams can be inserted in position, the nuts having first been removed, after which they are replaced. The device as a whole is then located at the desired point anywhere on the beam, when it may be secured by applying the jack, and forcing the cams around with reference to the body ring. The cam rings are provided on their outer sides with a segmental slot adapted to receive a screw-threaded stud, secured in the body of the ring and provided with a nut on the outer end. The adjustment of this head causes no injury to the loom beam no matter how often the position is changed.

Further information can be obtained on application to the manufacturers.

SHRINKING AND FINISHING WOOLENS AND WORSTEDS FOR THE MANUFACTURING TRADE.

There have been few woolen processes which have been the subject of so much investigation within the last few years as the method of giving the right finish to woolens and worsteds so they will stand sponging. "London shrunk" is a term on every salesman's tongue.

The system introduced and manufactured by the Hydraulic Press Mfg. Co. of Mt. Gilead, O., has attracted favorable attention from the manufacturing trade and with manufacturers of goods who have installed it. They build all the necessary appliances, including tanks, hangers, hydraulic presses, trucks, hydraulic pumps, etc. The keynote of their process is water treatment as distinguished from steaming. They claim the advantages of the water process are very great and that it does not make any material dif-

ference how the water is applied so long as the cloth is thoroughly moist, properly hung and dried. They advise that water shrunk cloth should never be steamed afterwards as the steaming hardens the fiber. With their process, the cloth is cold pressed with their hydraulic press, fitted with a pressure gauge, or indicator, so the operator may know what pressure to give, for different classes of fabrics require different pressure.

In answer to the objection that the power press leaves creases, they admit that it is so, but if the operator understands his business the creases are not permanent and do not interfere with the cutting. This criticism they say is far more than offset by the improved feel of the fabric; the yarn is round and plump and the fabric feels heavier, handles and hangs right and is thoroughly shrunk.

It is also argued that this process of pressing may put on too high a finish, but they state that it rests wholly with the operator, who can give any finish desired with this press.

With the old screw press method where the press was filled and left to set for twelve to twenty-four hours, the capacity of press work was limited, but with their hydraulic press the work can be practically continuous, the pressure can be regulated exactly and the cost of maintenance is negligible, as the same water is used over and over again. With the truck system provided for clamping the pressure on the goods as soon as obtained, the press is released and ready to receive another truck loaded with goods. One press can finish 150 pieces per day and give different pressure on each truck load if desired.

The process of wetting the cloth is very simple and although the hanging can be done by hand, their automatic machine which wets and hangs up by one operation is a great improvement over hand hanging. In this way the goods are not handled and there is no danger of disturbing the pattern by bad or irregular hanging or pulling down lists. When the cloth is dry, it is not steamed, but is ready for the press.

Manufacturers and finishers who are interested in investigating this system of shrinking, pressing and finishing can get detailed particulars from the Hydraulic Press Mfg. Co., who have skilled experts in their employ for the purpose of aiding their customers.

PUBLIC DESIGNING IN ENGLAND.

BY ROMULUS.

In the textile economy of the Old World an important function is performed by the public designer. His work is artistic, for there is very little room outside the mills for purely technical designing. His customers are jacquard weavers and printers of silks and calicoes. Makers of carpets, curtains, table linen, quilts, cretonnes and such like, as well as printers of wall papers, find the public designer exceedingly convenient. From one or another designer they are able to pick the spice of variety which the productions of their private staff lack. Paris is the headquarters for public designing in Europe and from thence designs are sold to several countries. But up or down textile English designers are fairly numerous and from their ateliers many designs come which figure largely in textiles imported into America.

These designers range in degree from isolated individuals with a facile pencil who sell sketches casually to calico printers, up to organized firms of designers employing regular staffs and transacting considerable business. For the convenience of customers in the weaving trade, the latter will supply cards punched and ready for the loom, but card-cutting is a subsidiary and no longer a remunerative function. The main business is the organization and working out of designs. Their artists are always at work on new themes and the properly-equipped designer has constantly beside him a stock of sketches in the rough and a variety of designs for various purposes, all worked to scale and showing their application in practice. From amongst these prospective customers may choose, suggesting such alterations as seem desirable and receiving full designs promptly. A skilled designer visits the mills with an

armful of ideas more or less complete in themselves and together with his own head-designer the manufacturer goes through the batch.

To the calico printer a sketch is usually submitted in first instance, without reference to the number of colors required for its production. If approved, the design is completed in the necessary number of colors and the exact shades of these are shown at foot of the design and numbered. Where colors overlap to form a new combination the analysis shows a patch of this mixture with the numbers of the colors forming it adjoined. Only a rough idea can be given of the cost of such designs, but for ordinary subjects in 8 printings the ordinary price would be $40. For the table-linen trade, designs are laid out in opaque white upon one or two pieces of slate-colored paper. And for other purposes the designs are depicted in the colors proposed for the fabric. The English designer sells somewhat more cheaply than the Parisian who enjoys greater prestige and for what he asks $40 the French will get $50.

Variety is of the essence of the public designer's business as well as of his customers'. The enterprising designer therefore adds men of all nationalities to his staff. A typical product of the Quartier Latin, an artist from Alsace, a Hungarian, as well as Englishmen work side by side in what is probably the largest public designing rooms in England. One is a clever artist in oils and an exhibitor at the Salon, another is an accomplished water color sketcher, a third a devotee of flowers—and so forth. The composition of the staff is frequently changing and enlarging in number. In all, some sixty people will be engaged, most of them girls painting-in upon point papers, with several draughtsmen who are not original designers. All these are at work in a large and well-lighted oblong room, the girls and draughtsmen at long desks, the veritable designers at their easels. The latter are simple constructions made by nailing wooden slats slightly slanting from floor to ceiling. Round these and the cross-frames, stout paper is stretched to make a foundation for the design-sheet.

At one of these the designer works, spacing or deleting, in obedience to instructions, the details of some adopted design or sketching out a new idea. His difficulty in square work is always to make corners fit themselves naturally and comfortably. The border is easily arranged, but to fill the inner corner by reversing details from the main design and with no appearance of effort or overcrowding consumes a lot of time. Of course the craftsman's value to his employer consists in his industry as well as his fertility. It is found impracticable to drive him against his will and inclination, and time-agreements with foreign designers are singularly valueless pieces of paper. Employers discover their importations, after a certain time, designing in their spare hours and offering these direct to their customers. This is not the only trouble of the public designer. There are always manufacturers who are more ready to borrow his ideas than to pay for his designs. To keep the designer expectant and attentive they buy one production at stated intervals and set their own designer to adapt a dozen stolen ideas between whiles. This, as well as the disposition of some buyers to hold out of the sight of others designs they do not want to buy themselves, is the condition the public designer has to combat.

Possibly the opinion of one capable organizer of designers on the relative merits of girls and boys has its importance. He finds girls quicker to learn the intricacies of the trade, up to a certain point. Boys are slower, but they go on learning and thus attain a proficiency ultimately which the other sex seldom acquire. As to the race of designers as we know them, it is seen that those who are clever artists are rarely sharp business men. Their productions require art to sell as well as to make and the calling requires exceptional endowments to lead to high success. The fate of most is to plod along in a small way suffering many rebuffs and injustices for which there is little real redress.

Dyeing, Bleaching, Printing, Etc.

THE COMMERCIAL VALUATION OF THE STABLE HYDROSULPHITES.

BY WILLIAM C. THUDIUM.

Winner of the Textile World Record Gold Medal, at the Philadelphia Textile School, 1909.

The use of hydrosulphites in the textile industry is limited to discharging and stripping dyed colors and to vat setting for such colors as indigo, indanthrene, algole, ciba colors, etc. The principle involved in discharging or stripping dyed colors with hydrosulphites is that the dyestuff, already on the fiber, is reduced to a colorless compound, hence the color is discharged or stripped. This can be best illustrated by the direct dyes, which contain azo groups. Certain reducing agents, particularly the hydrosulphites, have a destructive action on this group, reducing the dyestuff to its constituents, which being colorless and frequently soluble, are very easily removed by washing.

Some dyestuffs are of such a chemical nature as to be more readily reduced than others, and some are totally unaffected by such treatment. Moreover, one hydrosulphite may reduce one dyestuff or class of dyestuffs better than will another hydrosulphite and hence a knowledge of the hydrosulphites, obtained by making practical working tests, is of great advantage to the dyer and printer who uses them.

Ordinary hydrosulphites are known to be of such a nature that, when made up and kept in closed vessels, they do not keep for more than two weeks without some decomposition. In fact it requires much care and skill in the preparation of a hydrosulphite to have it keep for even that length of time.

One method for preparing hydrosulphite is as follows: The materials used are zinc dust, bisulphite of soda, and quicklime. The zinc dust should be of a good commercial quality, and should contain 98 per cent. of metallic zinc. The bisulphite of soda is the usual commercial article of 76° to 77° Tw. and containing approximately 35 per cent. of actual bisulphite. It should smell strongly of $S O_2$, and be clear and free from grit. The quicklime should be of a good commercial quality, well burnt, slaking easily and as free from grit as possible.

7 1/2 lbs. zinc dust are made into a paste with 1 gal. of water.

10 gals. bisulphite of soda—diluted with 20 gals. water.

The zinc dust and the bisulphite are mixed by stirring well, and the temperature should not rise above 100° F. The mixture is

WILLIAM C. THUDIUM, WINNER OF THE TEXTILE WORLD RECORD GOLD MEDAL.

stirred for about two hours, and then 10 lbs. of quicklime in 2 gals. water is slowly added.

When thoroughly mixed, the mass is allowed to stand all night, and is then passed through a filter press. The liquor coming through will be the required hydrosulphite of soda. It should stand at about 20° Tw.

From this quantity the yield should be 25 gals. The keeping qualities of the hydrosulphite of soda are enhanced by the addition of 1 lb. caustic soda 40° Tw. to each 10 gals. of hydrosulphite liquor.

This is not very strong hydrosulphite, but it is more easily prepared than a stronger solution, as it is difficult to control the temperature, and unless the temperature is kept below 100° F. there will be a decrease in the strength of the hydrosulphite. If this liquor is kept in well closed glass carboys, it should keep from one to two weeks.

In conjunction with acids which liberate the oxide of sulphur, sulphurous acid and its salts were the first reducing agents employed in bleaching and printing. It was discovered later that these materials were capable of dissolving certain heavy metals, in this manner producing discharge effects in a simple and certain manner.

Although in the second half of the eighteenth century, Berthollet, Fourcroy and Vanquelin had observed the fact that certain heavy metals were dissolved by sulphurous acid without any liberation of hydrogen, and had also noticed the powerful reducing action of the resulting solution, it remained for Schutzenberger, in 1869, to discover the chemical nature of these solutions.

When sodium bisulphite acts upon zinc, a double salt, zinc sodium sulphite separates and the mother liquor contains a true hydrosulphite, to which Schutzenberger gave the formula $NaHSO_2$. This salt is the active principle of all the hydrosulphite discharges now upon the market.

Later researches, however, have demonstrated the fact that Schutzenberger was not quite correct in his formula. For a long time the great instability of the compound prevented its use in printing, but the reaction by which it was prepared was utilized by generating it on the fiber, when the defective keeping qualities were of course no drawback.

There was, however, a further difficulty in that unacted upon particles of zinc settled on the printing rolls and the prints lacked sharpness of outline, and at the same time the particles of zinc dust had a scratching effect on the rolls and streaks were produced on the goods. Hence some other method had to be discovered for the preparation of the hydrosulphite.

Schutzenberger proposed that, since the salt had power to reduce indigo blue to indigo white, vats should be made up on that principle. Thus the origin of the hydrosulphite vat, which came into use forty years later, and which is now almost universally used for synthetic indigo.

Bernthsen, who discovered that sodium hydrosulphite could be thrown out of solution from Schutzenberger's salt by sodium chloride, came next. The precipitated salt was put on the market by the Badische Anilin u. Soda-Fabrik, but found little use owing to its sensitiveness to oxidation. What was needed was a compound of less energy, which could withstand atmospheric oxygen until its reducing action was wanted.

Various double hydrosulphites were tried, which were more stable than the simple sodium salt, yet they proved inefficient for practical purposes. When the investigation had reached this point it was noticed that the more stable double hydrosulphites were less soluble than the extremely unstable sodium hydrosulphite. This led to the idea that there was a relation existing between stability and solubility, and it was inferred that an insoluble hydrosulphite would fulfill all the requirements of stability consistent with exerting a reducing action, when converted into a soluble salt at the moment of use. Messrs. Meister, Lucius & Bruning, acting on this scheme, put Hydrosulphite Z, a zinc salt, on the market. This product, in the presence of sodium carbonate, was converted to simple sodium hydrosulphite and discharged para red, para brown and alpha-naphthylamine claret to a pure white. The discharge, however, choked up the grooves of the rollers just as the zinc dust had done in the old process.

Inasmuch as hydrosulphites possessed the

requisite reducing properties for textile purposes, their instability prevented them from being stocked. There were many who sought to remedy this defect, quite a number directing their efforts by the well-known properties of the salts of sulphurous acid to combine with aldehydes and ketones. Of course attempts were made along other lines, notably by Jacob Grossman, in 1898. He recommended the use of insoluble hydrosulphites, which were more stable than corresponding soluble salts.

M. Descamps proposed the use of a paste of hydrosulphite of calcium, which retains its strength for several months if kept in an alkaline state.

These methods did not provide for keeping dry hydrosulphite, so that textile printing had to confine itself to the use of discharges with zinc dust and bisulphite, which, besides being very unstable, are difficult to print.

The first to propose aldehyde compounds were Arthur Pellizza and Louis Zuber in a sealed packet deposited with the Societe Industrielle de Mulhouse on April 22, 1899. In 1901, the Farbwerke, Hoechst, mentions the use of formaldehyde for increasing the stability of a discharge of bisulphite and zinc dust.

At the end of 1902, Camille Kurz, of the firm of Zundel of Moscow, deposited sealed documents to the same effect, with reference to hydrosulphite, with the Rouen and Mulhouse Societies. Kurz's process contained a bad feature, in that it simply made a mixture of hydrosulphite and formaldehyde. What is necessary is a definite chemical combination of the hydrosulphite with the aldehyde.

M. Descamps won a silver medal, offered by the Societe Industrielle de Rouen, for a preparation which he patented. He called his preparation Hyraldite. It was a dry crystalline compound of formaldehyde and sodium hydrosulphite. It was soluble and could be dried in a current of air at a temperature not exceeding 212° F. without decomposition. Solutions of Hyraldite printed on goods with a suitable thickener and dried in this manner, develop their reducing properties only on steaming.

This idea of the combination of the hydrosulphites with formaldehyde seems to have solved the problem. The salts so prepared are easily soluble, permanent in the air and yet are very powerful in their reducing properties when such properties are desired, that is when they are acted on in the fabric by super-heated steam.

(To be continued.)

CARBONIZING WOOL.

BY ALFRED CLARKE.

Before the Huddersfield (Eng.) Technical College.

(Continued from June.)

The fleece wool, which had been used in the old time for padding, had become too costly for general use, and cows' and goats' hair, which had been partly substituted, had followed the same course, owing to the increased demand by manufacturers of railway rugs and imitation skin fabrics, such as were so largely produced in Heckmondwike at that period.

The captain's new extract shoddy was discovered to be an admirable substitute, owing to the perfect disinfection and cleansing it had undergone in the process of extracting and washing, and a demand soon arose that outran the inventor's means. A company was formed and the works sold to it, and for a while a profitable business was carried on, the trade extending to the United States, where an unlimited market was found; and also to Germany, where it was readily adapted to textile purposes. But in spite of success, the works were before long broken up, owing to the directors quarreling among themselves and rushing into the Court of Chancery to settle their disputes. The trade, however, was too profitable to be allowed to die out, and another London firm entered into it.

The period of the great civil war in the United States was approaching, and on its outbreak an insatiable demand was made for extract shoddy by the Governments of both North and South, presumably for making hospital beds and army saddlery. Extract works sprung up over the London district. Finer qualities sold for as much as 2/6 per

pound (60 cents), in London, and only very inferior qualities were sold at 1/6 (18 cents) and 2/- (24 cents) per pound, so that fortunes were lost and won in the course of a few weeks by speculations in rags and extract.

So far as Yorkshire is concerned it appears that a Batley man was the first to make successful use of it in the textile trade. About the year 1856, having heard of extract shoddy, probably in consequence of a sample being left with his firm, and hearing that it was made by some application of oil of vitriol to rags, he determined to try, and having succeeded in a small way in a basin, he proceeded with locked doors to deal with larger quantities, using for this purpose the household wash-tub, soon rotting the unlucky tub with his vitriol; but he persevered, obtained new tubs, and continued to devote all his spare time to experiments. At last he ascertained the exact degree of strength of acid that would disintegrate the cotton without making the wool too tender for use.

About the middle of the year 1857 he took a quantity of prepared material to a local mill to be shaken and carded. All turned out well, and he sold the result of his venture at a profit, and found a customer ready to take all he could produce by means of his wash-tubs. Finding that he had not the means of developing the trade, he applied to his father-in-law who was a dealer in shirtings. It struck him that extract shoddy would sell in the same quarter, and for the same purpose as the kind of material he dealt in, and they formed a partnership under the title of the well known firm of Wildsmith and Carter.

The article, however, met with little favor in the Batley district, but went better in Huddersfield, and a firm there offered to take it in the form of yarn if they would spin it. In May, 1859, they began to do so. They found, however, that the results were not very promising, but with commendable perseverance they stuck to it until the middle of the year 1860. The outcome, however, was so poor that after that they abandoned the attempt, but by selling the article in bulk for export soon reached a princely trade With the outbreak of the American war a golden shower of profits burst over them as well as others, and extract works arose throughout the West Riding in regiments, for extract with a strong complement of "jute coffee bagging" pulled into a vegetable shoddy, formed the staple of the United States blankets, and other army goods supplied to the unfortunate Yankee soldiers, so that the production of the article took a firm hold of the Yorkshire district, and has become a staple material for the manufacture of the cheaper fabrics. From these accounts we may safely assume that different investigators were at work, having the same object in view, in various parts of both this country and the continent at about the same time.

The process though mechanically simple calls for the utmost care. Before treating wool by any of the methods it is necessary to have it thoroughly washed, so as to remove every particle of grease. If this is not done, the wool will be made tender, and cannot be milled, while it will not dye well. Experiments have been made to test this, and it has been found that "sulphuric acid, acting on imperfectly cleansed wool sets at liberty the fatty acids of the grease, which fix themselves on the wool and cannot be removed by the after processes." In addition to this, the grease that remains clogs the saw-like edges of the wool, gluing down the points of the serratures, thus making the edges smooth and destroying the felting quality of the material. The fibers are so considerably weakened, that on being milled they do not form a compact mass, but are liable to be torn or worked into holes. Where, however, the wool has been well washed before being treated with the acids, no injury whatever is done to it, provided, of course, that the carbonizing is effected properly.

Wool washed in the usual way, and wool washed and carbonized, have been microscopically examined, and the scales and serrations of the latter have been found to be just as clear and perfect as those of the untreated wool. Other additions to the acid

bath, such as borax, alum and common salt, have been recommended, with a view to protecting the wool from the action of the acid, but so far as I am aware are not generally adopted.

The first requirement, then, is material as free as possible from grease. It is then steeped an hour or more, according to the nature of the vegetable material present in the wool, in dilute sulphuric acid of a strength of 5° to 7° Tw., equal to a Specific Gravity of 1.025 to 1.035, or 4 to 5 per cent. of $H_2 SO_4$.

The bath can be used successively for some time. The indications of the strength of it by means of the hydrometer cannot be relied upon after the first time, as a part of the acid becomes neutralized by the impurities introduced with the wool, which, having been scoured with soap and alkalies, may not have been entirely removed in the washing. It is therefore necessary to control the strength of the bath by testing it from time to time by the usual volumetric method of ascertaining the percentage of free acid present.

After steeping, the material is lifted from the bath and allowed to drain, when it is passed through the hydro-extractor to remove as much of the acid as possible. It is now ready for drying at a temperature of at least 212° F., that being the boiling point of water. This may be effected in the case of wool by laying it on perforated plates, passing through a drying machine, or any other convenient method, the object being to dry the material as rapidly as possible. The hot air of the drying chamber absorbs the moisture very rapidly, leaving the $H_2 SO_4$ in a highly concentrated state in the wool, and of course in the vegetable matter that may be mixed with it.

Machines are made specially for either wool, noils, rags, or for cloth carbonizing and consist of two chambers. In the first chamber the material is dried at a rather low temperature, after which it passes into the second or hot chamber where the temperature is much higher. It is argued that the quick action of an intense heat upon the already dry material is less liable to injure the color, and that its elasticity is better preserved.

The next process after the wool is thoroughly dry is to pass it through a crushing machine which is fitted with a pair of heavy rollers so that the vegetable substances are crushed to powder, which drops out as the wool passes through the beaters of the machine. Then follows the "neutralizing" bath where the acid which is still retained is neutralized by means of an alkali, generally carbonate of soda.

(To be continued.)

ESTIMATION OF WEIGHTING ON SILKS

BY JULIUS PERSOZ.

(From La Revue generale des matieres Colorantes.)

(Continued from June.)

These reagents when employed in the cold do not attack the fibroin as they certainly would under the influence of heat. After the first acid bath the liquid becomes slightly charged with logwood and salts of iron, at the same time acquiring a reddish appearance. At the end of about half an hour the pattern is removed, washed, squeezed and introduced into the alkaline solution. In this bath logwood, fustic, catechu, and other astringents enter into solution; on the other hand Prussian Blue, so commonly used today as a base for blacks, is destroyed by the caustic soda, leaving on the fiber oxide of iron, which is removed by the subsequent treatment in acid. Some advantage is gained by adding to the alkaline solution a small quantity of an alkaline sulphide, the sulphides formed on the fiber being readily dissolved in the succeeding acid bath. On the other hand, a more or less appreciable quantity of stannic acid and other tin compounds are converted to their sulphides and become immediately dissolved in the alkaline bath. After half an hour's treatment the pattern is removed, washed, and submitted to the action of a fresh proportion of acid solution. The treatment is repeated alternately with the one and the other bath until the silk loses a notable proportion of its coloring principles. By saturating at the end of each acid treatment a small portion of the reagent

with ammonia, the amount of precipitate obtained indicates the progress of the stripping action. The greater or less the rapidity with which blacks may be stripped depends, of course, upon the nature of the method of dyeing and upon the proportion of weighting, and, it may be added, in certain cases upon the age of the fabric. Silks dyed "light" black with logwood quickly lose almost the whole of their coloring constituents, while others require repeated operations. Repetition is suspended when the reagents cease to become sensibly colored or when by saturation with ammonia they form insignificant precipitates.

Having arrived at this extreme point it is then necessary to interrupt the treatment by submitting the pattern for half an hour at least to the action of a boiling soap bath (2 per cent.), followed by a thorough rinsing with hot distilled water, and then repeating the treatment with cold acid and alkali respectively, to attain the limit indicated. This first part of the treatment being terminated, the silk presents an appearance varying in shade from a light brown to a maroon. This coloration indicates the retention by the fiber of more or less appreciable quantities of astringent matters.

To reduce this color further the pattern may be allowed to remain for the necessary length of time in a bath of hydrogen peroxide, 1 volume of the commercial product to 3 volumes of water heated to 140° F., and containing an addition of magnesium hydrate prepared from recently calcined magnesia. It is interesting to note the facility with which the catechu is destroyed under this influence, otherwise so difficultly removable. Satisfactory results are attained in this direction in some cases by using the various hydrosulphite preparations which, although useful for the destruction of certain artificial coloring matters, do not seem to exert themselves on astringent matters, as efficiently as the bath detailed. The pattern after leaving this bath is thoroughly rinsed in cold and hot water successively, and submitted to desiccation. After having been properly conditioned the pattern is weighed and a portion, or the whole, incinerated. If the recommendation to add an alkaline sulphide to the caustic soda has been followed the ashes obtained should be entirely free from iron, and appear perfectly white or only slightly colored. It may happen in some determinations, notably on "light" blacks, that the treated pattern on incineration leaves no ash at all. Such is the method of determination which has been employed in the Conditioning House of the Paris Chamber of Commerce during the last 15 years, but today it is rendered more complete by the employment of hydrofluoric acid, by the use of which the residue of mineral matters may be reduced to a minimum, or even removed entirely.

It is an easy matter to combine the two methods by preceding the treatment with cold hydrochloric acid with a bath of hydrofluoric acid 1 1/2 per cent. at 140° F. for 20 minutes. Samples of weighted silk cloths were stripped comparatively, the one by this modification of Martinon's method, the other by Zell's process with hydrofluoric acid, and others by the two systems combined. After conditioning in the free air, the patterns were weighed previous to incineration for the determination of the mineral matters still retained. The following results were obtained:

	After the treatment with Hydrochloric acid and soda	After treatment with Hydrofluoric acid (Zell)	After combined treatment
Black No. 1 (old)	10.8%	9.3%	4.7%
Black No. 2 (old)	4.4%	2.0%	—
Black (new)	1.6%	1.0%	—
White (old)	9.0%	—	—
Brown (new)	1.6%	—	—

From these figures it is noticeable that the hydrofluoric acid removes perfectly all the mineral matters from both the white and the colored silk and, as regards the blacks, the combined treatment permits of diminishing the proportion of ash of the first pattern and of removing completely from the others all the mineral matters, a result which is not without interest. In calculating the amount of weighting this factor is represented not by the total quantity of foreign matters, such as coloring matters and mineral substances that accompany the fibroin, but by the in-

crease in weight which has been acquired by ecru silk of the same sort. Consequently, if a is the weight of the pattern taken for examination, and b that of the same rendered perfectly free from all mineral matters and decolorized, in fact, brought to the state of fibroin, the amount of weighting is not represented by a—b, but a—e, when e represents the weight of the ecru silk; then the percentage weighting C, is reached by the formula

$$C = 100\frac{a-e}{e}.$$

Allowing n to represent the percentage loss of this ecru silk by boiling off there is then

$$\frac{e}{b} = \frac{100}{100-n},$$

and the weighting of the dyed pattern being

$$a-b\frac{100}{100-n},$$

and the percentage weighting sought

$$C = (100-n)\frac{a}{b} - 100.$$

When b, however, is not free from mineral matters, a condition recognizable by a preliminary test made on a small portion of the treated pattern, it is necessary to deduct first the amount, d, found on weighing exactly before submitting to incineration, and p being the weight of the ash thus furnished by the pattern, b, formulates the equation $p\frac{d}{b}$

Admitting, however, with Martinon, that stannic acid is found in the fiber, not in the anhydrous state, but combined with a molecule of water, it becomes necessary to multiply this value by the co-efficient 1.12. The quantity of silk substance contained in the stripped pattern, b, was then $b-1.12p\frac{d}{b}$ and the corresponding ecru silk

$$e = \frac{100}{100-n}\left(b-1.12p\frac{b}{d}\right).$$

The expression $100\frac{a-e}{e}$ represents the percentage weighting, giving together the general formula:

$$C = \frac{(100-n)ad}{b(d-1.12p)} - 100.$$

The method is serviceable in all those cases wherein the samples are treated with reagents which strip off the foreign organic substances, all or part of the stannic acid, and other mineral matters. It serves equally well for colored silks as for blacks. As the expression is of a positive value, it may be applied in the determination of the initial weight of ecru silks. Weighted silks, particularly those dyed with mordants of iron and tannin, diminish in volume considerably during the operations of stripping.

When examining those silks known as "weight for weight" blacks, the expression frequently indicates a value near to zero. Finally, if the expression yields a negative value it indicates that the whole of the ingredients employed in dyeing has been insufficient to give to the silk the weight which has been previously lost during "boiling-off."

This is found to be the case when estimating "light" blacks, which lose from 5 to 15 per cent.

White or light colored silks may be treated with hydrofluoric acid to strip and remove the total weighting, although in many instances a simple incineration alone suffices to permit of fairly accurate results.

In many Lyons works it is the custom to resort to a parallel case, a method of calculation, however, which is too empirical.

The proportion of ash having been ascertained, the factor representing its weight is (1) multiplied by 1.27; (2) the product subtracted from 100; (3) the difference multiplied by 4/3; (4) divide 1,000 by the number obtained; (5) subtract 100 from the quotient, the figures finally obtained representing the amount of weighting.

For those less conversant with formula of this nature, the following explanations may be useful:

(1) The multiplication of the percentage weight of ashes by 1.27 is adopted with the object of taking into account the water and fatty compounds combined with the metallic oxides; (2) by subtracting product from 100 the weight is obtained of the "boiled-off"

substances; (3) this difference multiplied by 4/3 represents the initial weight of the silk in its ecru state, supposing, as admitted in Lyons, that silk loses on an average 25 per cent. by "boiling-off"; (4) knowing the weight of the ecru silk which serves to supply 100 parts of weighted silk, the amount of the latter corresponding to 100 parts of ecru silk is calculated by the fourth step; (5) this weight, taken from 100, represents the weighting. Naming p the percentage proportion of the ash, the complete expression becomes

$$C = \frac{3}{4} \times \frac{10}{(100 - p \times 1.27} - 100.$$

The Hockanum Mills, Rockville, Conn., have plans prepared for a new dye house of one story, 194 by 75 feet. Regular mill construction is to be employed. The floor is to be of concrete covered with vitrified brick. The dye kettles will rest upon hard pine beams supported by brick piers. The building is to be heated and ventilated by means of heating coils in connection with fan blowers. Among the main features will be twenty-two wooden ventilating stacks for taking care of the steam from the dye kettles.

DYE RECIPES.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 97.

Yellow on Worsted Yarn.

Xylene Yellow 3 G on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Xylene Yellow 3 G.
(W. F. Sykes & Co., 85 Water St., N. Y.)
10 lbs. Glauber's Salt.
4 lbs. Sulphuric Acid.

Enter at 140° F. and dye at a boil for one hour.

Xylene Yellow 3 G is recommended for its fastness to light and washing. It combines readily with other acid colors.

Recipe No. 98.

Black on Cotton Yarn.

Katigen Deep Black R on 100 lbs. cotton yarn. Prepare the dye bath with

8 lbs. Katigen Deep Black R.
(Farbenfabriken Co., 66 Lafayette St., N. Y.)
16 lbs. Sodium Sulphide (Crystals).
8 lbs. Soda Ash.
60 lbs. Common Salt.

Enter at 180° F., dye for one hour at a temperature just below the boil.

Katigen Deep Black R possesses very good fastness to the ordinary color-destroying agencies.

Recipe No. 99.

Green on Worsted Yarn.

Milling Green S on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Milling Green S.
(Read Holliday & Sons, 11 Gold St., N. Y.)
10 lbs. Glauber's Salt.
3 lbs. Sulphuric Acid.

Enter the material cool, raise to a boil, and continue boiling to shade. The color should be dissolved before entering into the dye bath.

Milling Green S is very fast to light and milling.

Recipe No. 100.

Brown on Cotton Yarn.

Pyrol Brown G R Extra on 100 lbs. cotton yarn. Prepare the dye bath with

6 lbs. Pyrol Brown G R Extra.
(C. Bischoff & Co., 451 Washington St., N. Y.)
12 lbs. Sodium Sulphide.
4 lbs. Soda Ash.
60 lbs. Common Salt.

First boil up the bath with the soda ash, then add the dyestuff which has been previously dissolved in boiling water containing the sodium sulphide. The bath is then boiled for a short time, and the Glauber's salt added. The material is entered and the dyeing continued for one hour at a temperature of about 200° F.

Pyrol Brown G R Extra possesses good fastness to all of the common color-destroying agencies.

Recipe No. 101.

Bright Brown on Cotton Yarn.

Tetrazo Sulphur Brown 3 R G Extra on 100 lbs. cotton yarn. Prepare the dye bath with

7 lbs. Sulphur Brown 3 R G Extra.
(American Dyewood Co., 184 William St., N. Y.)

10 lbs. Sodium Sulphide.
5 lbs. Sal. Soda.
60 lbs. Common Salt.

The dyestuff, sulphide and soda are boiled together and then added to the dye bath, after which the salt is added.

Enter just below the boil, and boil gently for an hour.

Tetrazo Sulphur Brown 3 R G Extra is a concentrated bright orange brown of exceptional value in the production of rich brown dyeings on cotton fast to light, fulling and cross-dyeing.

Recipe No. 102.

Olive on Worsted Yarn.

Fast Chrome Olive X on 100 lbs. chrome mordanted worsted yarn. First mordant the yarn in a bath made up with

2½ lbs. Potassium Bichromate,
2½ lbs. Lactic Acid,

entering the material at not over 120° F., bringing slowly to a boil and boiling for 1 1/2 hours. Then add the mordanted yarn in a bath containing

1 lb. Fast Chrome Olive X.
(C. Bischoff & Co., 451 Washington St., N. Y.)
1 lb. Acetic Acid.

Fast Chrome Olive X when dyed in this manner produces colors extremely fast to the ordinary color-destroying agencies.

Recipe No. 103.

Blue on Worsted Yarn.

Palatine Chrome Blue 3 B on 100 lbs. worsted yarn. Prepare the dye bath with

5 lbs. Palatine Chrome Blue 3 B.
(Badische Co., 128 Duane St., N. Y.)
3 lbs. Acetic Acid.
20 lbs. Glauber's Salt.

Raise slowly to a boil, boil for 1/2 hour, then add in two or three portions, and at intervals of 1/4 hour

¾ lb. Sulphuric Acid

to exhaust the bath. Finally add

2 lbs. Potassium Bichromate

and boil for 1/2 hour longer.

Palatine Chrome Blue 3 B possesses very good fastness to most of the common color-destroying agencies.

Recipe No. 104.

Red on Worsted Yarn.

Wool Red S G on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Wool Red S G.
(Geisenheimer & Co., 189 Front St., N. Y.)
4 lbs. Sulphuric Acid.
10 lbs. Glauber's Salt.

Enter at 140° F. and dye at a boil for one hour.

Wool Red S G is a particularly brilliant red and possesses very good fastness to light and will be found of value as a self color, as well as in the production of compound shades.

Recipe No. 105.

Blue on Worsted Yarn.

Anthracene Chrome Blue B W Extra on 100 lbs. worsted yarn. First mordant the yarn in a bath containing

3½ lbs. Potassium Bichromate,
3 lbs. Tartar,

entering the material at 120° F. and bringing slowly to a boil and boiling for 1 1/2 hours.

The material is then entered into the dye bath made up with

3 lbs. Anthracene Chrome Blue B W Extra.
(Cassella Color Co., 182 Front St., N. Y.)
2 lbs. Acetic Acid.

The material is entered at 100° F., brought slowly to a boil and dyed at a boil for 1 1/2 hours.

Anthracene Chrome Blue B W Extra possesses remarkable fastness to practically all of the common color-destroying agencies, and gives an excellent shade of blue.

Recipe No. 106.

Yellow on Worsted Yarn.

Milling Yellow G A on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Milling Yellow G A.
(Berlin Aniline Works, 213 Water St., N. Y.)
10 lbs. Glauber's Salt.
3 lbs. Acetic Acid.

Boil 1/2 hour, and then make a further addition of

2 lbs. Acetic Acid,

and boil 1/2 hour longer.

Milling Yellow G A possesses very good fastness to light, alkalies, and washing.

Recipe No. 107.

Violet on Worsted Yarn.

Alizarine Cyanole Violet on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Alizarine Cyanole Violet.
(Cassella Color Co., 182 Front St., N. Y.)
4 lbs. Sulphuric Acid.
20 lbs. Glauber's Sale.

Enter at 140° F. and dye at a boil for one hour.

Alizarine Cyanole Violet is a new wool-dyeing color which is characterized by excellent fastness to light and level dyeing properties. It will be found of great value in the dyeing of yarns where fastness to light is required.

Recipe No. 108.

Yellow on Cotton Yarn.

Sulphur Yellow G Extra on 100 lbs. cotton yarn. Prepare the dye bath with

6 lbs. Sulphur Yellow G Extra.
(Berlin Aniline Works, 213 Water St., N. Y.)
8 lbs. Sodium Sulphide.
5 lbs. Soda Ash.
50 lbs. Glauber's Salt.

First boil up the bath with the soda ash, then add the dyestuff which has been previously dissolved in boiling water containing the sodium sulphide. The bath is then boiled for a short time, and the Glauber's salt added. The material is entered and the dyeing continued for one hour at a temperature of about 200° F.

Sulphur Yellow G Extra possesses good fastness to all of the common color-destroying agencies.

Recipe No. 109.

Bright Green on Cotton Yarn.

Tetrazo Sulphur Green 2 Y on 100 lbs. cotton yarn. Prepare the dye bath with

10 lbs. Tetrazo Sulphur Green 2 Y.
(American Dyewood Co., 184 William St., N. Y.)
5 lbs. Sodium Sulphide.
3 lbs. Sal. Soda.
75 lbs. Common Salt.

The dyestuff, sulphide, and soda are boiled together and then added to the dye bath, after which the salt is added.

Enter just below the boil and boil gently for one hour.

Tetrazo Sulphur Green 2 Y may be employed with advantage for the production of bright greens on cotton fast to light, fulling and cross dyeing.

Recipe No. 110.

Red on Worsted Yarn.

X L Fuchsine 6 B on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. X L Fuchsine 6 B.
(Read Holliday & Sons, Ltd., 11 Gold St., N. Y.)
10 lbs. Glauber's Salt.
3 lbs. Sulphuric Acid.

Enter the material cool, raise to a boil, and continue boiling to shade. The color should be dissolved before entering into the dye bath.

X L Fuchsine 6 B is very fast to light and milling.

Recipe No. 111.

Orange on Worsted Yarn.

Salicine Orange 2 G on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Salicine Orange 2 G.
(Kalle & Co., 530 Canal St., N. Y.)
4 lbs. Acetic Acid.

Enter material at 100° F., bring slowly to a boil and dye at a boil for 40 minutes, then add

1 lb. Sulphuric Acid,

and boil for 10 minutes, and then add

1¼ lbs. Potassium Bichromate.

The boiling is then continued 30 minutes longer.

Salicine Orange 2 G is a level color, and is extremely fast to light. It is also suitable for dyeing on chrome mordant.

Recipe No. 112.

Green on Worsted Yarn.

Alizarine Direct Green G Pat. on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Alizarine Direct Green G Pat.
(H. A. Metz & Co., 122 Hudson St., N. Y.)
15 lbs. Glauber's Salt
3 lbs. Acetic Acid.

Enter at 104° F., bring to a boil in 3/4 of an hour and continue the boiling for one hour, and then add

3 lbs. Acetic Acid
or
2 lbs. Sulphuric Acid

to exhaust the dye bath.

Alizarine Direct Green G Pat. possesses very good fastness to light, alkali, perspiration, and steaming, and is well adapted to all branches of wool dyeing.

Mill News.

Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires facts and gossip of the trade are referred to the Textile Advance News, issued weekly by the publishers of the Textile World Record, at $15.00 per year.

COTTON.

New Mills.

*Alabama, Abbeville. A 20,000-spindle cotton mill is being planned for the Abbeville Power & Mfg. Co., reported incorporated last week with capital stock of $500,000. This company also has plans for a 20,000-spindle mill at Headland, Ala. J. L. Pollard is at the head of the project.

Alabama, Geneva. The Geneva Power Mfg. Co. has been incorporated with capital stock of $500,000 to build a cotton mill and hydro-electric plant. D. O. Vaughn and associates are the incorporators.

*Georgia, Albany. Proposals will be received until August 1 for the necessary equipment of the Albany Cotton Mills. Bids will be opened the first week in July for construction work on a main building, 4 stories high, 435 by 185 ft.; a cotton warehouse, 100 by 150 ft., and a 340 h. p. power plant. The equipment will include 10,800 spindles and 280 looms for manufacturing broad sheeting and print cloth. As reported some time ago the Albany Cotton Mills are capitalized at $250,000.

Georgia, Athens. I. W. Ingle, formerly of the Climax Hosiery Mills, and J. T. Jordan of the Athens Mfg. Co., will build a cotton yarn mill. They plan to invest $50,000 and equip a 3,000 spindle mill.

*Kentucky, Louisville. Preparations to begin manufacturing have nearly been completed by the Puritan Cordage Mills. About $60,000 has been expended for machinery and in making repairs on the plant.

Massachusetts, Boston. Stock of the Reciprocity Mills, to be located in East Boston, will shortly be offered for subscription. It is understood that the company will offer $1,000,000 preferred stock with $500,000 common stock as a bonus. There will also be issued, it is said, $500,000 common stock to trustees to be held for the benefit of employes. Plans have been completed for the first section of the mills by Lockwood, Greene & Co., and bids for construction work have been received. Contracts for machinery will soon be closed. Eugene N. Foss is at the head of this project.

*Massachusetts, New Bedford. Permit has been issued to Andrew G. Pierce, Jr., and others interested in the new tracing-cloth mill, to erect a spinning mill 3 stories high, 354 by 110 ft. with ell to be used for carding, 1 story high, 97 by 102 ft.; separate engine room, consisting of 2 stories with basement 52 by 60 ft.; weave shed 1 story and basement 243 by 300 ft.; a combination picker house and storehouse 4 and 5 stories high, 53 by 196 ft. The boiler house is to be 29 by 60 ft., 2 stories high, with a 160-foot chimney. Construction work has been started on the weave shed.

*Massachusetts, New Bedford. Buildings to be constructed for the Nashawena Mills are a 4-story brick spinning mill, 125 by 800 ft., and a 1-story and basement weave shed, 250 by 800 ft. About 125,000 spindles and 3,700 looms will be installed. A large steam power plant is to be constructed, and the power distributed electrically. Plain and fancy gray, fine cotton cloths from combed yarns, cotton and silk cloths, and other fabrics, to compete with imported goods, are to be manufactured. Preparations to begin construction work will be started at once.

*North Carolina, Albermarle. It has been decided to locate the proposed new mill in which J. W. Cannon of Concord is interested, and which it was originally reported would be located at Kannapolis, at Albermarle, and it will be operated as a branch of the Wiscasset Mills Co. of this place. The capacity of the new plant will be 25,000 spindles, and it will be known as Wiscasset Mill No. 4. Construction work will be started at an early date.

North Carolina, Landis. The Corriher Mill has been organized with capital stock of $100,000 to manufacture cotton yarns. C. J. Deal is president, and L. A. Corriher is secretary and treasurer.

*North Carolina, Lincolnton. The Saxony Spinning Co. has been incorporated with capital stock of $100,000 by Edgar Love, J. B. Wright and M. G. Myers. This is the company organized by Edgar Love, formerly of the Daniel Mfg. Co., to build and operate a 10,000 spindle mill on fine yarns.

*North Carolina, Marion. The Marion Mfg. Co. has awarded machinery contracts. Good progress is being made on the construction of buildings.

*North Carolina, Roanoke Rapids. Plans for the proposed cotton mill have been nearly completed. It has been decided to erect at Roanoke Rapids, a mill with capacity of 22,000 spindles and 750 looms for manufacturing ginghams. The buildings and equipment will cost about $650,000. The company will be incorporated as the Patterson Mills Co., by S. F. Patterson, treasurer of the Roanoke Mills Co. and the Rosemary Mfg. Co., W. M. Habliston, president of the National bank of Virginia, Charles Cohen, and T. C. Williams of Richmond, Va. The main building will be 2 stories high, 608 by 104 ft., with 50 by 100-ft. picker room. Electricity will be the motive power. Mr. Patterson may be addressed at Roanoke Rapids. No contracts have been awarded.

*North Carolina, Zebulon. Plans for the proposed plant of the Southern Spinning & Mfg. Co. are not completed, but are expected in a very short time. About $100,000 will be expended for buildings, equipment, etc. Five thousand spindles are to be operated on 12s to 16s hosiery yarns.

*North Carolina, Warrenton. The Peck Mfg. Co. has been incorporated with capital stock of $111,600, and as suggested recently will erect and operate a cotton mill. Thomas D. Peck of Pittsfield, Mass., is the largest stockholder. J. M. Gardner, C. N. Williams and others are associated with Mr. Peck in this enterprise.

*Oklahoma, Chickasha. Application for charter for the Oklahoma Cotton Mill, capitalized at $150,000, has been filed. Other particulars of this project have been given.

Pennsylvania, Glen Riddle. The A. P. Welch Manufacturing Co., recently formed by A. P. Welch, formerly with the Colonial Manufacturing Co., of Clifton Heights, are getting ready to start up their machinery. The company has capital of $15,000; George T. Butler, president; Edward J. Myngie, secretary, and A. P. Welch, treasurer, superintendent and buyer. The plant contains 115 looms which they will operate on Turkish towels, which they will dye, bleach and finish and sell through New York. They are now installing the machinery in their bleach house and expect to have 16 looms running within a few days. They will buy 14/1 cotton yarns, 2/20 warps and 18s and 20s cops.

Pennsylvania, Philadelphia. William Lockhart, formerly a member of the firm of Lockhart, Crawford & Hyndman, which dissolved partnership and disposed of their machinery, consisting of 25 looms on which they manufactured carpets, is arranging for the installation of new machinery in the mill at the southeast corner of Howard and Lehigh Ave., on which he will manufacture Turkish towels. The plant is expected to be in operation by August 1 next.

*Pennsylvania, York. As reported in May, Frank and Arthur Reeser, Herman Shetter, and Heillig Bros., are interested in the organization of a company to be known as the York Cotton Co. to build and equip a mill for manufacturing cotton toweling on 30 looms. It is understood that some woolen goods also will be made. A charter will be applied for shortly under the laws of the state of Pennsylvania. The capital stock will be $25,000. In about two weeks construction work will be started on a building to be erected on land west of Highland Ave., along the Western Maryland R. R. Frank Reeser was a charter member of both the York and the Monarch Silk Companies. The proposed building will be 3 stories high, 85 by 45 ft., with separate engine and power house. Manufacturing will be started just as soon as the equipment can be installed.

*South Carolina, Aiken. The Aquilla Mfg. Co., organized by W. D. McNeal, John A. Seigler and R. B. Carter of this place, will be capitalized at $200,000, and will probably begin with an installation of 10,000 spindles.

*South Carolina, Greers. John A. Robison of Arlington has been elected president and treasurer of the new Greers Mfg. Co. As reported recently, a mill with equipment of 10,000 spindles and 300 looms for manufacturing print cloth will be erected. Contracts for machinery have been awarded.

*Virginia, Martinsville. The Martinsville Cotton Mill Co. has been incorporated with capital stock of $200,000, and it has been decided to operate a mill of 16,000 and 400 looms. Z. T. McKinney is president, and R. L. Walker is treasurer.

Enlargements and Improvements.

*Alabama, Anniston. Construction work on the addition, which it was reported previously would be erected for the Adelaide Mills, will be done by C. J. Houser & Co. It will be a 75-foot extension of the present mill, and will provide space to increase the equipment from 5,000 to 10,000 spindles.

Alabama, Anniston. The Adelaide Mills have started construction work on an addition.

*Alabama, Bon Air. It is reported that the Coosa River Spinning Co. is having plans prepared for an enlargement, which will practically double the capacity of their present plant. Originally this company proposed to operate 10,000 spindles on hosiery yarns, but only 6,000 spindles have been installed. It is possible the reported enlargement is to bring the equipment up to 10,000 spindles as originally planned.

Connecticut, Willimantic. The side walls of No. 1 Mill of the Windham Mfg. Co. are being raised, and a flat roof will be put on the building in place of the present pitch roof. This will give an additional floor for manufacturing, but no new machinery is wanted, as it is planned to occupy the space by rearranging the present equipment.

*Georgia, Columbus. Decision has been made by the Columbus Mfg. Co. on the proposed enlargement of its plant. An extension, 275 ft. long, 4 stories high, will be built on the mill, and the capacity increased from 30,000 spindles and 800 looms to 50,000 spindles and 1,400 looms. The company will issue bonds for $300,000, and increase its capital stock from $500,000 to $600,000.

Georgia, Douglasville. The Lois Cotton Mills will increase their capital stock from $300,000 to $500,000, and double their capacity.

*Georgia, Elberton. It is probable the capacity of Swift's Cotton Mill will be increased when the new Home Cotton Mill takes control. 7,400 ring spindles and 174 looms are operated on chambrays, specialties and rope. W. O. Jones is president of the Home Cotton Mill; I. G. Swift, vice-president, and P. M. Hawes, secretary and treasurer.

Georgia, Hampton. At a meeting of the stockholders of the Hampton Cotton Mills it was decided to double their manufacturing capacity. 8s to 10s knitting yarns are manufactured on 6,000 ring spindles.

Georgia, LaGrange. An addition, 54 by 104 ft. will be built for the LaGrange Cotton Mills, and new machinery will be installed.

Georgia, LaGrange. Another enlargement to the Unity Cotton Mills will be made shortly.

They have plans prepared for a 54 by 100-foot extension of the present mill. This is in addition to the new 10,000-spindle mill on which construction work was started several weeks ago. It is understood that a number of new looms will be required.

*Georgia, Summerville. It has been decided to increase the capital stock of the Summerville Cotton Mill from $150,000 to $300,000, and double the present equipment, which consists of 5,000 ring spindles and 120 looms operated on ducks and similar goods.

Maine, Biddeford. Work has been started on the tearing down of a tenement block, owned by the Pepperell Mfg. Co., to make room for a new cotton warehouse and opening room, which is to be erected in the near future.

Massachusetts, Adams. The Berkshire Cotton Mfg. Co. has just received 240 new Northrop looms, which will be set up in No. 2 Mill.

Massachusetts, Adams. Contract has been awarded to the G. M. Parks Co. of Fitchburg, by the Renfrew Mfg. Co. for a humidifying system to be installed in the weaving department.

*Massachusetts, New Bedford. President Langshaw of the Dartmouth Mfg. Corporation states that it is proposed to have the looms in the new mill in operation by August 1, and the new spindles in operation by November 1. The capital stock has been increased from $1,200,000 to $1,800,000.

*Massachusetts, Fall River. At a meeting of the stockholders of the Flint Mills, it has been decided to erect a 50,000-spindle print cloth mill, and to increase the capital stock from $580,000 to $1,160,000. Construction work on the new mill will be started as early as possible.

Massachusetts, Fisherville. The directors of the Fisher Mfg. Co. have decided to build the 4-story addition contemplated in the Fall of 1908. The new building will be built on the east end of the main mill, and the new space will be used for weaving, carding, and spinning.

Massachusetts, Indian Orchard. An addition is being built by contractor Caspar Ranger to the mill of the Indian Orchard Co. Enlargement will be one story high, 88 by 40 ft. The new space will be occupied by the Hodges Fibre Carpet Co.

*Massachusetts, Lawrence. The Everett Mills have decided to add another story to the new mill under construction, making the building six stories high instead of five, as originally planned.

*Massachusetts, Newburyport. A modern installation of pickers will be made in the new space secured by erecting an addition to connect the picker house of Warner Cotton Mills with the main building. Cotton combs will be installed in the old gas house on Water St. The Warner Cotton Mills manufacture carded and combed yarn, 10s to 40s. C. M. Warner is president; P. T. Jackson, Jr., is treasurer, and Lewis Dexter, Jr., is agent and buyer. The product is sold through the Boston Yarn Co. At present 5,400 mule spindles and 16,576 ring spindles are operated.

Massachusetts, North Adams. In addition to enlargements to the weaving and spinning departments of the Greylock Mills, recently reported, a new picker room and storage shed will be built at a cost of about $12,000. Whitney Bros. have received contract for construction work.

*Massachusetts, Taunton. Work has been started on the new weave shed for the Corr Mfg. Co.

Massachusetts, Taunton. Twelve thousand spindles will be added to the New England Cotton Yarn Co.'s plants in this city immediately, and plans are being drawn for a mill to be erected on the east bank of the Mill River.

Mississippi, Water Valley. Improvements are being made in the dyeing department of the Yocona Mills. They are adding facilities for bleaching 4-ply yarn. In the fall a new dyeing, bleaching and finishing department will be erected to improve the output.

North Carolina, Albermarle. A large addition will be built for the Efird Mfg. Co. in the form of a 2-story building, 300 by 50 ft. Fifteen thousand spindles with accompanying machinery will be installed.

*North Carolina, Bessemer City. In about 90 days the addition under construction for the Huss Mfg. Co., which is to be equipped for carding and spinning, will be completed, and 2,080 ring spindles will be installed. The Huss Mfg. Co. has capital stock of $40,000 and operates 48 broad looms on damasks, selling the production through Burch-Bailey & Co., 10 Thomas St., New York. L. L. Jenkins is president, and C. J. Huss is secretary, treasurer and buyer. The plant is operated by steam power.

*North Carolina, Concord. The proposed new building for the Locke Cotton Mills Co. will be 1 story high, 125 by 545 ft., with saw tooth roof. The equipment will be 12,000 spindles.

*North Carolina, Cornelius. Finishing machinery is being placed in the addition completed for the Cornelius Cotton Mill last January.

North Carolina, Lumberton. An additional building will be erected for the National Cotton Mills, and 10,000 spindles for spinning hosiery yarns will be installed.

*North Carolina, Monroe. About October the new 5,000-spindle addition to the Icemorlee Cotton Mills Co. will be completed, as all preparations are being made to start construction work at once. The capital stock has been increased from $125,000 to $300,000 to finance the enlargement. W. S. Lee is president; J. L. Everett, treasurer, and Charles Iceman is general manager and buyer. The product, which is solely cotton yarns, is sold through C. E. Riley Co., Boston.

*North Carolina, Rockingham. Construction work was started June 4 on a 5,000-spindle addition to the Hannah Pickett Mills. The capital stock of this company is $200,000. R. L. Steele

is president, and W. B. Cole is treasurer, agent, and buyer. The plant is operated by steam power.

North Carolina, Taylorsville. Thirty new looms are being installed in the Alspaugh Cotton Mill.

Pennsylvania, Philadelphia. The National Tapestry Co. are removing from their present quarters to the first floor of the O'Neill Mill at Oxford and Josephine Sts., where they will have more space in which to conduct their operations and increase their equipment. They are operating 10 looms on mercerized curtains, table covers, Oriental curtains, etc., which they sell direct.

South Carolina, Camden. Twenty-four new Crompton & Knowles looms have just been added to the equipment of the Pine Creek Mfg. Co. An enlargement is being made at the present time to the slasher department.

*South Carolina, Gaffney. Curry & Spurgeon of this place have been awarded contract for the proposed enlargement of the Globe Mfg. Co.'s mill. Previous reports of this enlargement have been given.

South Carolina, Goldville. The capital stock of the Banna Mfg. Co. will be increased from $50,000 to $125,000, and the capacity doubled. Seven thousand spindles are operated at present on cotton yarns, 20s to 30s.

*South Carolina, Greenville. Good progress is being made on the addition to the Brandon Mills reported in February, and the company expects to complete the addition by September 1. Twenty-five thousand spindles and 700 looms for manufacturing print cloths will be installed. About 1200 h. p. will be obtained from a hydro-electric development.

South Carolina, Laurens. The Laurens Cotton Mill will erect an 80-foot extension to the present plant and install new equipment.

South Carolina, Newberry. Construction work will soon be started on the proposed addition to the Newberry Cotton Mills. The structure will be 75 by 180 ft., and will be equipped with 10,000 spindles and 300 looms. No contracts have been awarded as yet, but as it is planned to have the enlargement in operation by Jan. 1, 1910, it is probable arrangements for buildings and equipment will be completed shortly.

*South Carolina, Rock Hill. An order has been placed by the Aragon Mills for 4,000 new spindles. When the original buildings were erected space was provided for this enlargement.

South Carolina, Spartanburg. In the immediate future a large addition, with capacity of 25,000 spindles and 600 looms, will be built for the Beaumont Mfg. Co. Convertible cotton goods, carpet yarns and twines are manufactured.

South Carolina, Spartanburg. Ten thousand spindles and 250 looms will be added to the Arcadia Mills. They manufacture sheetings. J. E. Sirine of Greenville, South Carolina, will have charge of the enlargement. It is stated that all building materials and machinery have been provided for.

WOOLEN.

New Mills.

Massachusetts, Franklin. The Franklin Felt Co. has been organized with capital stock of $80,000 by Harry T. Hayward, president; W. S. Schuster, vice president, and Walter A. Clark, treasurer. Some time ago it was reported that Mr. Hayward would erect a new woolen mill at this place on what is known as the Fisher Farm, and that project relates to a mill for the new company. Plans are being drawn by Chas. T. Main, Boston.

*Ohio, Massillon. The Massillon Worsted Mills Co., recently reported incorporated with capital stock of $150,000, has organized with C. J. Lawrie, president; Peter Schneider, treasurer, and Joseph Armitage, superintendent. They plan to manufacture worsted yarns, and have the plant in operation by September 1. The company is not fully financed as yet, however. As reported previously they have purchased a five-acre site.

*Tennessee, Lebanon. All contracts have been awarded by the Lebanon Woolen Mill Co., which is establishing a woolen mill at this place. Twenty-five thousand dollars will be expended for constructing buildings, and about $25,000 for machinery.

Enlargements and Improvements.

*Connecticut, Rockville. Plans have been completed by Charles T. Main for the new dye house for the Hockanum Mills. The buiding will be one story high, 194 by 75 ft.

Maine, Camden. The Knox Woolen Co. will build a new dry house, using the lumber in the grand stand at the Camden Trotting Park, recently purchased by them.

Maine, Dexter. Twelve new looms are being installed in the Wassookeag Woolen Co.

Maine, Sanford. A two-story addition will be erected for the Goodall Worsted Co. This is in addition to the enlargements recently reported.

Maine, Wilton. An addition may be erected to the lower mill of the Wilton Woolen Co.

*Massachusetts, Fitchburg. Work has already been started on the construction of the enlargement to the dye house of the Beoli Mills (American Woolen Co.).

*Massachusetts, Holyoke. At the present time no information can be given regarding the mill to be erected on land recently purchased from the city by the Germania Mills. It is their intention, however, to build a large mill on the site within one year.

*Massachusetts, Lawrence. Construction work was begun May 10 on the new worsted spinning mill for the Arlington Mills and plans call for the completion of the building in time for manufacturing to begin about Jan. 1, 1910. The power will be distributed by motors and every feature of the construction and equipment of the mill will conform with the most modern practice. As reported recently, the capital stock has been increased to

$8,000,000. William Whitman is president, Franklin W. Hobbs, treasurer and buyer, and Wm. D. Hartshorne, agent. Employment will be given to 1,200 additional operatives.

Massachusetts, Lowell. A new dye house, 687 ft. long, and 46 ft. wide, will be built for the Bigelow Carpet Co. from plans prepared by Charles T. Main, Boston. As reported some months ago, the old dye house will be torn down to make room for the new structure.

Massachusetts, North Oxford. The Narragansett Worsted Co. of Washington, R. I., have purchased the Huguenot Mills at this place, and will move their machinery to this city before August. The name Narragansett Worsted Co. will be retained. James Marshall will be superintendent of the plant. At present 20 looms are operated, but this number will be increased to 50.

Massachusetts, Norton. The Talbot Wool Combing Co. has been incorporated with capital stock of $300,000. G. H. Talbot will be president, and Frank S. Talbot, treasurer. This refers to the new commission combing plant being started by the owners of the Norton Mills Co. Sixteen combs are to be operated and Joseph A. Middlebrook, formerly manager of the Barre Wool Combing Co., will have charge.

*Massachusetts, Pittsfield. A new set of cards has been installed in the woolen mill of J. L. & T. D. Peck Mfg. Co., as reported, but they cannot state definitely whether other new cards will be installed, as stated in earlier reports.

Massachusetts, Saugus. Fifty-six new looms have been installed in the Iroquois Mills by the United States Worsted Co. A night and day schedule is being contemplated by the officials.

Massachusetts, Saxonville. Twenty new looms will shortly be added to the equipment of the Saxonville Mill. The plant is reported to be busier at present than at any time for a number of years.

*Massachusetts, Watertown. An addition is being built to the engine room of the Bemis Mills which will be completed in July. A 350 h. p. electric generator is to be installed.

*Massachusetts, Watertown. Construction work will be started at once on the proposed addition to the Aetna Mills, and upon its completion 62 new looms for manufacturing men's wear and dress goods in worsteds and woolens will be installed. The capital stock of this company is $450,000. Edwin F. Atkins is president; Morrill A. Smith, treasurer; Frederic W. Freeman, general manager and buyer, and Richard Lees, superintendent.

Massachusetts, Worcester. Plans have been completed for a large addition to the wool sorting department of M. J. Whittall, carpet manufacturer. The addition will be of brick construction, 1 story high,, 89 by 51 ft. No contracts have been awarded.

New Hampshire, Hillsboro. A brick and concrete structure, 140 ft. long, is being erected for the Hillsboro Woolen Mill Co., and will be used as a scouring room.

*New Hampshire, Tilton. As reported previously, Arthur S. Brown has purchased the interest of William H. Moses in the Tilton Mills, and the new officers are Arthur S. Brown, president, treasurer, and buyer; D. S. Knight, superintendent. There will be no immediate change in the plant as the result of the change in ownership, although Mr. Brown will shortly begin preparation of plans for the construction of a new dye house and drying room.

*New Jersey, Camden. William Lund & Son, manufacturers of worsted yarns on 1,360 spindles, Bradford system, are now removing their machinery to their new plant in Valley Forge, Pa. It is their intention, after the machinery is all installed and in operation, to put in additional machinery for scouring and combing their own wool. The plant at Roylestown, Pa., will be continued at that address until their lease expires, which will not be for two years yet.

*New Jersey, Garfield. The proposed addition to the New Jersey Worsted Spinning Co. will be 1 story high, 260 by 480 ft., with saw-tooth roof. This improvement will cost about $100,000.

*New York, Firthcliffe. The addition, which it was rumored would be built for the Firth Carpet Co., is in the form of a new weave shed, 95 by 194 ft. Construction work has been begun. The Firth Carpet Co. has capital stock of $1,100,000. Thomas F. Firth is president, B. H. Tobey is treasurer, and Fred Booth is superintendent and buyer. The plant is operated by steam and water power.

*Ohio, Cleveland. Within two weeks ground will be broken for the foundations for the proposed new mill of the Cleveland Worsted Mills Co., which will be 370 by 90 ft., six stories high. It is announced that the new equipment will include a 3,000 h. p. engine and 340 looms. Mr. G. H. Hodgson advises that they plan to have the entire new equipment in operation by Jan. 1, 1910.

Pennsylvania, Bridgeport. Architects in Philadelphia have completed plans and invited bids, due June 7, for an addition to the woolen and worsted yarn spinning plant of James Lees & Sons Co. The new building will be fireproof, 209 by 79 ft., five stories high. There will also be a reinforced concrete tank tower with a 40,000-gallon sprinkler tank for supplying water to their sprinkler system. The company has a capital of $800,000, with C. F. Williams, president; Abram T. Eastwick, secretary and treasurer, and W. L. Stauffer, vice president and agent. They are manufacturing worsted yarns on the Bradford system and woolen yarns, operating 17,000 worsted spindles, 45 worsted cards, 26 sets woolen and 28 combs. The plant is run by steam and they do their own dyeing. When the new addition is finished it is said that considerable new machinery will be added to their present equipment and their production increased accordingly.

Pennsylvania, Philadelphia. The Kensington

Hair Cloth Co., now located in the building at Kensington Ave. and Nicetown Lane, right outside of Frankford, are arranging for the removal of their plant to the building at the southwest corner of Hancock St. and Lehigh Ave., where they will occupy one of the upper floors. They operate 70 looms.

Pennsylvania, Philadelphia. Wheeler & King, beamers of plain and fancy warps at 243-45 East Ontario St., with 2 frames, will install looms for the manufacture of worsted men's wear and dress goods. The equipment will consist of 12 looms, two of which will be delivered and set up within a few days. The plant will be run by electricity and the production sold direct. They will also continue in the business of beaming for the trade on commission.

Pennsylvania, Philadelphia. The contract has been let and the work started on a two-story addition to the present factory building of Schofield, Mason & Co., manufacturers of carpets at Fairhill and Cumberland Sts. The estimated cost is $17,500.

*Pennsylvania, Philadelphia. The new buildings to be erected at 23d and Allegheny Ave. for Wolstenholme & Clark, spinners of worsted yarns in Manayunk, about which we have made mention on several occasions, will consist of a six-story factory, 105 by 208 ft., a two-story stable, 22 by 71 ft., and a three-story boiler house, 62 by 77 ft. The estimated cost of the operation will be $150,000. The operation has been started and will be pushed forward to completion as rapidly as possible.

Pennsylvania, Philadelphia. Alfred Clegg, receiver for O'Neill & Co., Germantown Ave. and Ruffner Sts., manufacturers of wastes, shoddies, etc., whose plant was recently almost destroyed by fire, reports that in the interest of the creditors it is his intention to have the buildings restored to their former condition, new machinery installed and will continue it in operation with a view of paying off their indebtedness in full and returning the plant to its former owners.

Pennsylvania, Philadelphia. At a cost of $6,000 Thomas Wolstenhome & Sons Co., spinners of worsted yarns, who have been making improvements to their plant for the past six months, have placed a contract for the building of another addition, one story, of brick, 50 by 169.5 feet, at the corner of Frankford Ave. and Westmoreland St.

Pennsylvaia, Philadelphia. A contract for alterations to the boiler and engine house of Folwell Bros. & Co., manufacturers of woolen and worsted goods for men and women's wear at 3d and Cambria Sts., has just been given out. The cost is estimated at $3,500.

Pennsylvania, Philadelphia. S. H. & B. W. Fleisher, manufacturers of woolen and worsted yarns and braids, with mills in the Fairmount district and in Manayunk, are arranging for the erection of a large new dye house in which they will install the latest improved machinery for this purpose.

Rhode Island, Carolina. Ten Crompton & Knowles looms are being added to the equipment of the Carolina Mills Co.

*Rhode Island, Pawtucket. The Royal Weaving Co. has placed a contract with the Allis-Chalmers Co. for complete equipment for its new power house.

Rhode Island, Peacedale. New worsted spinning frames are being installed in the Peacedale Mfg. Co., taking the place of woolen mules.

*Rhode Island, Thornton. It is stated that work will be started within a few days on the proposed new mill for the Victoria Mills. The new building is to be used for carding and combing.

Rhode Island, Providence. Another story is being built on the spinning mill of the Elston Worsted Co. to be used for a mending room.

*Rhode Island, Woonsocket. The new Paragon Worsted Co. has organized with Fred E. Warren, president; Frederic Delude, treasurer; and J. C. Mailloux, agent and buyer. As reported previously the new company takes over the plant of Sayles & Prendergast, and will operate 26 broad looms on men's worsted goods. The product is sold direct. Some changes will be made in the plant in the nature of improving the dyeing and finishing facilities.

*Tennessee, Nashville. The Nashville Woolen Mill Co. advise that they have sold a number of their 3/4-looms and bought 6/4 looms to replace them. All arrangements for the change have been made.

*Vermont, Bennington. The name of Holden, Leonard & Co. has been changed to Holden-Leonard Co. C. W. Leonard is president, A. J. Holden, treasurer and T. L. Thomas, secretary. As reported previously, one of their old buildings will be replaced with a new 2-story structure which will combine the present weaving departments. Fifty new worsted looms have been ordered and will be installed during July and August. Worsted goods will be manufactured on this new equipment and all yarns will be bought.

*Virginia, Fredericksburg. Contract has been placed by the Melville Woolen Co. for 4 sets of cards, to be installed in the building now under construction.

West Virginia, Martinsburg. Plans are being considered by the Crawford Woolen Co. for increasing their capital stock from $50,000 to $150,000 by the issue of $100,000 worth of 7 per cent. preferred stock for the purpose of enlarging the plant. Cassimeres are manufactured on 50 looms.

Mills Starting Up.

Connecticut, Danielson. The Danielson Worsted Co. is being started up on commission weaving. A large amount of work is ahead.

Maine, Brooksville. Thomas A. Tunney has leased the Brooksville Woolen Mill, and will manufacture knitting yarns for the trade.

Mills Shutting Down.

Pennsylvania, Ardmore. The Nitre Hall Mill, operated by John Burns on woolen and cotton carpet yarns containing 3 sets, 468 spindles, is out of existence. The building has been sold to the Philadelphia & Western R. R., who will use it for other purposes, and the machinery sold out at public auction.

SILK.

New Mills.

*New Jersey, Paterson. The Manhattan Ribbon Co., recently reported incorporated with capital stock of $50,000, will manufacture all widths of high grade silk ribbons, starting manufacturing June 1, with 500 spindles and 100 looms. They will occupy the mill recently purchased from A. & M. Levy, which is fully equipped. The plant is operated by steam power. Emil Friedman is president, Horace Neild, treasurer, E. Mutzburg, superintendent.

Pennsylvania, Allentown. It is reported that Amandes R. Schuler, Clerk of the Orphans' Court, has organized a company which will be known as the Vera Cruz Silk Co., which will be incorporated with Francis Kline and William F. Stanley as incorporators. A mill will be built at Vera Cruz in which they will install machinery for the manufacture of silk fabrics and employ a considerable number of hands.

Pennsylvania, Lewiston. Construction work is progressing rapidly on the new mill being erected for the Susquehanna Silk Mills of Sunbury, which will be known as Mill No. 6. The main building will be 330 by 189 ft.

*Pennsylvania, Punxsutawney. Land has been purchased here by Joseph Mack and Leo Schimpff of Allentown, Pennsylvania, on which a silk mill will be built.

*Pennsylvania, Philadelphia. A charter has been asked for the F. Metz Company, with Frederick Metz, Peter Metz, Sr., and Peter Metz, Jr., as incorporators. This company, which was reported by us several weeks ago, is in operation at 2d and Allegheny Ave., where they have installed looms on which they are manufacturing silk ribbons.

*Pennsylvania, Wilkesbarre. The mill under construction for the past two months for the Leon & Ferenbach Silk Co. is nearly completed, and will be ready for machinery in about ten days. Machinery equipment has begun to arrive. This company was incorporated in March with capital stock of $100,000, and will do silk throwing on 12,000 spindles. Henry Leon of Bradford, is president, and Carl Ferenbach of this city is secretary.

*Virginia, Buena Vista. In April it was rumored that Emanuel Geril of New York had purchased the Buena Vista Woolen Mills, and would locate a silk industry in the buildings. The Buena Vista Silk Co. has been incorporated under the laws of New Jersey with capital stock of $50,000 by Emanuel Geril, William H. Ashley of Hackettstown, and others. This no doubt refers to the new enterprise. George H. Blake will be agent.

Enlargements and Improvements.

Connecticut, Mystic. The Ninigret Mills Co. has perfected arrangements to finance the proposed addition to its plant. The capacity will be doubled, giving an equipment of 224 looms.

Connecticut, Norwich. Fifteen new looms are being installed in the local plant of Givernaud Bros.

*Connecticut, Willimantic. The Holland Mfg. Co. has begun work of remodelling their dye house. A small addition will be built to the mill.

*Massachusetts, Northampton. Contract for an addition to the plant of Belding Bros. Co. has been let to the H. P. Cummings Construction Co. of Ware. Work will be started at once, and the construction company agrees to have the addition done in three months. Other plans are being made to enlarge the dye house and for additional power.

New Jersey, Paterson. Inglis & Co. have purchased the Ramsay & Gore Mill and started the machinery. They intend in the near future to move their present plant from the Essex Mill, and in time to operate all their machinery under one roof.

New York, Middletown. New equipment will be installed in the Middletown Silk Co.'s plant, consisting of 5,000 spindles, making the total equipment 25,000 spindles. They do a commission throwing business. The capital stock is $100,000. Joseph S. Mack is president and buyer; Leopold E. Schimpff, treasurer, and George Walker, Jr., superintendent.

Pennsylvania, Hazelton. The Duplan Silk Mills are again to be increased, the mills having been enlarged about two years ago. Bids are now being asked, due June 8, for an addition to their present building to be 77 by 59 ft., one story in height. The walls to be of brick construction and the columns and girders of slow burning wood construction. The plant of the Duplan Silk Co. is located on Diamond Ave., where they are manufacturing piece dyed silks and silk mixed goods on 900 looms, selling the production through New York.

*Pennsylvania, Reading. The new mill being built on Chestnut St. for Steiner & Talcott Silk Co. is larger than at first reported, the dimensions being 3 stories high, 45 by 170 ft., with separate power house, 1 story high, 35 by 40 ft. Their present plant will be moved into the new building about October, and an increase will be made over the present equipment.

*Pennsylvania, Siegfried. Construction work was begun June 14 on the new 2-story brick mill, 56 by 120 ft., for the Central Silk Mfg. Co., Inc. Upon its completion in September the new building will be equipped with 200 new looms. Broad silks are manufactured. The capital stock is $100,000. Ogden E. Frederick is president; W. Willouby, treasurer and buyer; and Herman Feld-

hege, superintendent. The plant is operated by steam power.

*North Carolina, High Point. No details have been given out of the proposed enlargement to the plant of Stehli Co. at this place, but it is assured a new mill will be built. All business is done at the New York office, 103-105 Green St.

Mills Starting Up.

*Connecticut, Norwich. The broad silk plant of Michael J. Green has been started up by Brainerd & Armstrong Co. of New London. The machinery equipment will be increased.

MISCELLANEOUS.

New Mills.

*Connecticut, East Killingly. Organization has been effected by the Hope Print Works Co., recently reported incorporated with capital stock of $200,000. Richard T. Keene of Central Falls, R. I., is president; John Hope, Jr., Providence, vice president, and George K. Moore, Pawtucket, R. I., secretary and treasurer. The plant is being equipped at the present time.

*Connecticut, Meriden. The United Braid Mfg. Co., recently reported incorporated with capital stock of $20,000, will manufacture cotton, mercerized, and silk braids on 300 braiders, with electric power. H. Adlman has been elected president, and S. Fightlin is treasurer, superintendent, and buyer. They will buy 2/20s cotton, 12/20 and 12/16s cords, and single 40s mercerized.

*New Jersey, Hillsdale. It is reported that some of the machinery equipment for the recently incorporated Hillsdale Bleaching Co. has been purchased, and is in transit. It will be installed in the building formerly used by the American Cigar Box Co., which property is to be sold within a few days, it is understood, to clear the title. George Bothamly is president of the Hillsdale Bleaching Co; Casper V. Gunther, treasurer. Besides the officers, a Mr. Werner is interested.

Pennsylvania, Philadelphia. The Kensington Embroidery Works, with a capital of $5,000, are applying for charter. The plant is located at 1916 E. Westmoreland St., where they have installed machinery for making embroideries of every description and embroidering full fashioned hosiery as a specialty. The officers of the company will be Gustav F. Lipfert, president and superintendent, William Scheer, treasurer, and Herman Theileman, secretary. The plant, whcih is now in operation, is run by electricity and the production is sold direct.

FACTS AND GOSSIP.

Alabama, Gadsden. R. A. Mitchell of this place is in communication with parties who contemplate the erection of a large cotton mill in this vicinity. Mr. Mitchell plans to build a hydro-electric plant at Fort Payne, Ala., and will endeavor to have the proposed mill located there.

*Georgia, Atlanta. It has not been decided whether to rebuild the Southeastern Mills recently damaged to the extent of about $50,000 by fire. They cleaned and manufactured cotton waste, and began manufacturing only a few months ago.

*Georgia, Eatonton. The Imperial Cotton Mills, recently organized to take over the Middle Georgia Cotton Mills, as reported, have capital stock of $150,000. The buildings and equipment will be greatly improved during the next two months.

Kentucky, Louisville. It is denied that the Bradford Worsted Spinning Co., a new concern organized a few months ago, will take over the Hope Worsted Yarn Co. It is admitted that offers have been made, but no negotiations have developed.

Maryland, Elkton. It is reported that the Deibert & Wilson Mfg. Co. will rebuild its plant destroyed by fire several months ago.

Maryland, Franklinville. It is reported that the Consolidated Cotton Duck Co., Baltimore, will install 300 new looms in the Franklinville Duck Mills, which they own.

Massachusetts, Boston. Five million dollars additional preferred stock will be issued by the American Woolen Co., increasing the capital stock from $75,000,000 to $80,000,000. The new issue is to provide for additional working capital.

*Massachusetts, Boston. Lockwood, Greene & Co., architects, have completed plans for a weaving and a spinning mill for the proposed Reciprocity Mills.

Massachusetts, Dedham. James C. Ewing of New York has purchased the buildings, boiler, and shafting of the Merchants Dye Works, the company reserving its machinery, which will be removed to some other location. It is not known what use will be made of the property.

*Massachusetts, Holyoke. Nothing has been done up to the present time in the matetr of transferring the plant and business of D. Mackintosh & Sons Co. to other parties.

Massachusetts, Lowell. The Merrimack Mfg. Co. has notified tenants in the corporation houses on Worthen St. to move, and it is reported the houses will be torn down preparatory to the erection of a mill for the manufacture of velveteens. It will be remembered that the Merrimack Mfg. Co. is operating this department of the Cocheco Mills at Dover, N. H.

FIRES.

Canada, Ontario, Dunnville. The Erie Woolen Mills, John Slingsby, proprietor, have been destroyed by fire. The loss is estimated at $12,000, insurance $8,000. Knitting yarns and woolens were manufactured on 2 sets and 4 looms.

Georgia, Atlanta. A severe fire occurred in the new Southeastern Mills causing loss of about $50,000, fully insured. This company cleans and manufactures cotton waste. Most of the damage was to stock.

Personals.

Willis M. Kimball was convicted in the superior Court at Salem, Mass., charged in twenty-four counts with a larceny of wool from the American Woolen Company. He was found guilty of larceny in five of the counts and sentenced to not more than eight or less than four years in state's prison at hard labor, one day in solitary confinement.

Thos. L. Ross, superintendent of the Cannon Mfg. Company, Kannapolis, N. C., and Miss Laura Leslie, of Concord, N. C., were married at the home of the bride recently. The bridal tour was to New York City, Atlantic City, and other northern points.

Sam Leach, overseer of burling and sewing at the Aetna Mills, Watertown, Mass., was presented with a traveling bag and gold mounted meerschaum pipe in token of the esteem in which he was held by the help in the sewing department at the Aetna Mills, Watertown, Mass., when he severed his connection with that company to accept a position at the Arlington Mills, Lawrence, Mass.

Louis M. Contere has taken charge of the shearing department at the Tilton Mills, Tilton, N. H.

James H. Gill has accepted the position as second hand in the finishing department at the Great Falls Woolen Company, Somersworth, N. H. He comes from Millbury, Mass.

John T. Eyers has severed his connection with the Franklin Mills, Franklin Falls, N. H., in the finishing department on account of ill health.

James White of Arctic, R. I., has accepted a responsible position with the Whittenton Mfg. Co., of Taunton, Mass. He commenced his labors the first of June.

Geo. E. McCannon has accepted the position as second hand in the carding department at the Columbia Mills, Lewiston, Me. He comes from Downingtown, Pa.

Michael Tracey, overseer of the dressing department at the Stanley Woolen Company, Uxbridge, Mass., was painfully injured by being caught in a warp compressor.

Albert Crabtree has been promoted to the position as superintendent of the dyeing and finishing at the Southwark Mills, 8th and Tasker Sts., Philadelphia, Pa.

W. H. Epps has been appointed superintendent of the Lafayette Cotton Mill, Lafayette, Ga. He was formerly employed at the Pearl Cotton Mills, of Beverly, Ga.

Fred C. Hall, overseer of the spinning department at the Cocheco Woolen Mfg. Company, Dover, N. H., for the past five years, has resigned to accept a similar position in a Rhode Island mill.

Paul Grant has accepted the position as head loom fixer at the Griffin Mfg. Company, Griffin, Ga., succeeding Henry Watley.

G. G. Allen has accepted the position as second hand of carding at the Gibson Mills, Concord, N. C.

Jeff Smith has accepted the position of loom fixer at the Fulton Bag & Cotton Mills, Atlanta, Ga. He comes from Scottdale, Ga.

Thomas H. Fielding, for nine years overseer of spinning at the Intervale Mills, Webster, Mass., has resigned and accepted an advanced position at the Warrenton Woolen Company, Torrington, Conn. Before leaving Webster, the help employed under Mr. Fielding presented him with a handsome watch chain and charm and a diamond stick pin.

E. W. Holt has accepted the position as second hand of winding at the Avalon Mills, Mayodan, N. C. He comes from Mt. Airy, N. C.

Lewis Fryar has been promoted from loom fixer to second hand in the cloth room at the Delgado Mills, of Wilmington, N. C.

Samuel Ward has accepted the position as bookkeeper at the Pilot Cotton Mills, Raleigh, N. C. He was formerly employed at the German-American Company, in a similar position, at Draper, N. C.

Henry F. Harris, after twenty years of service, has tendered his resignation as treasurer of the West Boylston Mfg. Company, Easthampton, Mass., same to take effect June 15. The following appointment has been made by the directors: John Skinner, treasurer and G. Arthur Cook, assistant treasurer and secretary.

J. A. Ring has accepted a position as overseer of finishing at the Herbert E. Shaw Mills, Wales, Mass.

Morris J. Lannon, who has been employed at the Southwark Mills, 8th and Tasker Sts., Philadelphia, Pa., in the finishing department, has severed his connection with that company.

James Maguire has accepted a position as overseer of weaving at the Ellis Mills, Monson, Mass. He comes from Lewiston, Me.

Louis E. Wagg, overseer of the weaving department at the Boott Mills, Lowell, Mass., has been appointed resident manager of the Chace Mfg. Company, Fall River, Mass.

Michael Mullaney, superintendent of the Androscoggin Mills, Lewiston, Me., for the past ten years, has severed his connection with that company.

B. H. Hirst has accepted a position in charge of the picking department for the National Woolen Company, Cleveland, O. He comes from South Acton, Mass.

Harry S. Lytle has accepted a position as overseer of bleaching and finishing at the Oxford Linen Mills, North Brookfield, Mass.

John McGill, overseer of finishing at the Mayo Woolen Company, Millbury, Mass., has resigned and accepted a similar position with the Worcester Woolen Mills Company, Worcester, Mass., succeeding Daniel Marley.

John Maguire has accepted the position as overseer of finishing at the Bound Brook Woolen Mills, Bound Brook, N. J. He comes from Blackstone, Mass.

Wm. Smith, superintendent of the Pequot Mills, Montville, Conn., has severed his connection with that company.

R. W. Barber, agent of the Faulkner Mfg. Company, North Billerica, Mass., has severed his connection with that company.

Guy H. Peckham has accepted the position as master mechanic at J. Broadbent & Son's, Unionville, Conn. He comes from East Lyme, Conn.

J. M. Herndon, secretary and buyer of the Seneca Cotton Mills, Seneca, S. C., has been appointed manager of the plant.

C. K. Taylor has been appointed secretary and treasurer of the Natchez Cotton Mills, Natchez, Miss. He comes from Shelbyville, Tenn.

Fred Johnson has accepted a position as overseer of finishing at the Southwark Mills, Philadelphia, Pa. He comes from Bound Brook, N. J.

Kenneth McKenzie, formerly of Rock Hill, S. C., has returned to his old position as overseer of finishing at the Whittier Mills, Chattahoochee, Ga.

E. D. Roy succeeds J. D. Beachum as overseer of weaving at the Chiquola Mills, Honea Path, S. C. He was formerly with the Draper Company.

T. F. Blume has accepted the position as overseer of spinning at the Siluria Cotton Mills, Siluria, Ala. He comes from Concord, N. C.

T. M. Drummond has been appointed overseer of the cloth room at the Canton Mills, Canton, Ga. He comes from Anderson, S. C.

Geo. E. Ide, secretary and treasurer of the Ide Cotton Mills, Jacksonville, Ala., has been appointed vice-president of the company to fill the vacancy caused by the resignation of J. W. Hawks.

Munsey T. Gilley, master mechanic at the American Warehouse Company, Spray, N. C., has severed his connection with that company. He is to accept a similar position at Martinsburg, Va.

Thomas E. Palmer has resigned as manager of the Westerly Silk Mills, Westerly, R. I. He is succeeded by Zachariah Cole.

Nelson C. Williams, for a number of years overseer of dyeing at the Otis Company, Ware, Mass., died at his home in that town following a stroke of apoplexy, at the age of 58 years.

John Gormley, Jr., has been appointed designer at the Selkirk Mills, of the River Spinning Company, Woonsocket, R. I., succeeding J. F. Dunn. Mr. Gormley comes from the Terry Mfg. Company, Waterville, Me.

Milton R. Cummings, employed as second hand in the weaving department at the Pontiac Mills, Riverpoint, R. I., has severed his connection with that company.

F. C. Henderson has been engaged to take charge of the cotton mill at Clinton, La.

Fred Meal has accepted the position as overseer of weaving at the Mills Mfg. Company, Greenville, S. C. He comes from the Saxon Mills, Spartanburg, S. C.

Rudolph Mueller has been appointed overseer of finishing at the Ashtabula Worsted Company, Ashtabula, Ohio. He comes from New York City and succeeds John Gledhill.

W. A. Evans has been appointed agent of the Faulkner Mfg. Company, North Billerica, Mass., succeeding R. W. Barber. Mr. Evans formerly held this position.

Frank Morganson has accepted the position as overseer of finishing at the Marston Worsted Company, Skowhegan, Me.

E. Thornton has accepted the position as overseer of dyeing at the Marston Worsted Company, Skowhegan, Me.

Lees Hall, overseer of dyeing at the Marston Worsted Company, Skowhegan, Me., has severed his connection with that company.

Albion Ford has been appointed overseer of dyeing at the North Berwick Company, North Berwick, Me.

Anthony Cannon, for the past twenty-five years employed as second hand in the card room at the Lancaster Mills, Clinton, Mass., has severed his connection with that company. He was presented with a handsome gold watch and chain by the help employed in the carding department.

Fred Dimock has accepted the position as overseer of dressing at the J. J. & A. D. Ellis Mills, Stafford Springs, Conn.

James O. Sweet, treasurer, agent and general manager of the Ashland Cotton Company, Jewett City, Conn., declined a re-election at the annual meeting of the stockholders. He has been connected with this establishment since 1863 and will remain on the Board of Directors. Grovernor Ely has been elected treasurer, agent and general manager, to fill the position made vacant by Mr. Sweet.

Thomas Connors has accepted a position in the wool department at the Washington Mills, Lawrence, Mass.

Patrick Shields has resigned as foreman of the bleaching department at the Oxford Linen Company, North Brookfield, Mass.

John Collier, formerly superintendent of the Vassalboro Woolen Mills, Vassalboro, Me., has taken a similar position with the Cocheco Woolen Mfg. Company, at East Rochester, N. H.

Wm. Cadzow has taken the position as overseer of finishing at the Louisville Woolen Mills, Louisville, Ky.

Marcell Reandeau, overseer of the combing department at the Lorraine Mfg. Company, Pawtucket, R. I., has severed his connection with that company.

James Higginson has accepted the position as overseer of warp dressing at the M. T. Stevens & Sons Company Mill at Haverhill, Mass. He comes from Hinsdale, N. H.

Jos. Clasgens, president of the J. & H. Clasgens Woolen Mills Company, of New Richmond, Ohio, died at his home at the age of 69 years. He was a director of the First National Bank and a member of St. Peter's Church.

Wm. H. Gerrish has accepted the position as superintendent of the jute and flax department of the Columbian Rope Company, Auburn, N. Y. He comes from Paterson, N. J.

Howard P. Andrews has been appointed overseer of spinning at the Pontiac Mfg. Company, Pontiac, R. I. He comes from the Dwight Mfg. Company, Chicopee, Mass.

Abe Hey, overseer of weaving at the Dunn Worsted Company, Woonsocket, R. I., has severed his connection with that company on account of ill health.

R. T. David has accepted a position as overseer of weaving at the Echota Cotton Mills, Calhoun, Ga. He comes from the Petterton Mills, Jackson, Ga.

M. O. Banks, president of the Grantville Hosiery Mills, Grantville, Ga., died suddenly at his home in that city. His death was unexpected.

T. H. Haywood of Haw River, N. C., has accepted a position with Frederick, Vietor & Achelis, commission merchants. Mr. Haywood was a member of the graduating class of the Philadelphia Textile School of this year.

R. H. Armfield has accepted the position as overseer of carding at the Holt-Williamson Mfg. Company, Fayetteville, N. C. He was formerly connected with the Proximity Mfg. Company, Greensboro, N. C.

Wm. H. Turner, Jr., has accepted a position as overseer of spinning at the Hogansville Mfg. Company, Hogansville, Ga. He was formerly employed as overseer of spinning at the Tallassee Mfg. Company, Tallassee Falls, Ala.

John Pownders has been promoted to the position as overseer of spinning at the Cherry Cotton Mills, Florence, Ala.

W. J. McDonald has accepted the position as superintendent of the Walton Mill, Monroe, Ga. He was formerly superintendent of the Star Thread Mills, Athens, Ga.

Ralph Wilson has been appointed superintendent of the Floyd Cotton Mills, Rome, Ga. This company was recently organized.

Chas. Gillette, overseer of spinning at the Whittier Mills, Chattahoochee, Ga., has resigned to accept a position at the Appleton Mills, Lowell, Mass.

J. W. White, overseer of carding at the Cotton Export Company, Westpoint, Ga., has resigned on account of poor health.

Robert Monckton has severed his connection with the Granite State Mills, Fairbanks & Dorr, proprietors, and accepted a position as overseer of weaving at the Brampton Woolen Company, Newport, N. H.

Frederick L. Snow, superintendent of the dyeing department at the Lawrence Mfg. Company, Lowell, Mass., has severed his connection with that company.

Walter N. Oldham has accepted a position as overseer of finishing at the Mayo Woolen Company, Millbury, Mass. He was formerly employed at the Vassalboro Mills, North Vassalboro, Me.

Frederick R. Pratt has accepted the position as master mechanic and chief engineer at the Berkshire Cotton Mfg. Company, Adams, Mass. He comes from Norwich, Conn.

James A. Higgins has accepted the position as second hand in the spinning department at the Franklin Mills, Franklin, N. H. He comes from North Billerica, Mass.

Hans S. Ringland has accepted the position as overseer of finishing at the Yantic Woolen Company, Yantic, Conn. He comes from Keene, N. H.

John Tuite has accepted a position as overseer of dyeing at the Great Falls Woolen Company, Somersworth, N. H. He comes from the Hartford Woolen Company, Hartford, Vt.

W. H. Bailey has accepted the position as overseer of finishing at the Holton Dyeing & Finishing Company, Philadelphia, Pa. Mr. Bailey was formerly employed at Providence, R. I.

Simeon Wrigley has taken charge of spinning at the Angus Park Mfg. Company, East Glastonbury, Conn. He comes from North Andover, Mass.

William Cadzow has taken charge of finishing at the Louisville Woolen Mills, Louisville, Ky.

David Lindsay, for the past thirteen years superintendent of the Enterprise Sillk Company, Paterson, N. J., has severed his connection with the above firm and will at once take charge of the A. J. Van Riper Company's plant in the Congdon Mill.

M. J. Fagan has accepted a position as overseer of finishing at the Bay State Worsted Company, Worcester, Mass.

G. Willis Saunders has been admitted as a partner to P. G. Kent in the manufacture of woolen goods at the Kent Woolen Mills, Worcester, Mass.

Wm. Wells has accepted a position as overseer of dyeing at the Hartford Woolen Company, Hartford, Vt. He was formerly employed at the Ray Mills, Franklin, Mass., and previous to that time he was with the Elm Woolen Mills Company of Tilton, N. H.

Robert W. Ringland has accepted a position as overseer of finishing on the night shift at the Uxbridge Worsted Company, Uxbridge, Mass. He comes from Keene, N. H.

Hugo Schultz, overseer of finishing at the Great Falls Woolen Company, Somersworth, N. H., has severed his connection with this company.

Henry C. Templeton, overseer of finishing at the Marston Worsted Company, Skowhegan, Me., has severed his connection with that company.

John Mahoney, overseer of dyeing at the Hope Mills Mfg. Company, Hope, N. C., has resigned and returned north. He had been with this company for the past two years.

John S. Whitney, master mechanic at the Nashua Mfg. Company, Nashua, N. H., for the past twenty years, and who retired about two years ago, died at his home in that city, Tuesday, June 3. He had been ill for some time.

Henry Maloney has reentered the employ of A. Roberts & Company, Woolen Mill, at Claremont, N. H., as overseer of weaving. He formerly held this position.

A. E. Donalds has accepted a position as assistant superintendent at the Uxbridge Worsted Company, Uxbridge, Mass. He comes from Lawrence, Mass.

Arthur E. Cooper, designer at the M. T. Stevens Sons Company's mill at Haverhill, Mass., has been appointed assistant superintendent to fill the position held by John A. Currier, he having been advanced to the position of superintendent.

Jesse A. Knight has been appointed agent of the Manomet Mills, New Bedford, Mass., succeeding Chas. M. Holme.

O. F. Seiferth was elected president; R. A. Reed, vice president; C. E. Bailey, secretary; D. F. Dorman, treasurer of the Textile Mills Association, organized at Columbus, Ga., at a meeting recently held.

Wm. C. Scott has accepted the position as overseer of weaving at the Dominion Textile Company, Moncton, N. B., Canada. He comes from the Esmond Mills, Esmond, R. I.

Thos. H. Spurr has accepted the position as overseer of dyeing at the Jefferson Mfg. Company, Jefferson, Mass. He comes from Millbury, Mass.

Will Niles has accepted the position as overseer of the cloth room at the Hillsboro Cotton Mill, Hillsboro, Tex.

W. S. Griffin, overseer of spinning at the Albion Mill, Mt. Holly, N. C., has severed his connection with that company.

W. B. Osborne, formerly overseer of carding and spinning at Laurel Hill, N. C., has accepted a position as overseer of spinning at the Magnolia Mill, Charlotte, N. C.

Arthur R. Dickinson has been appointed overseer of carding at the Merchants Mfg. Company, No. 1 and 2 Mill, Fall River, Mass. He comes from New York Mills, N. Y.

W. B. Fitz has been appointed superintendent of the Utica Cotton Company, Utica, N. Y. He comes from East Hampton, Mass.

DEATHS.

D. N. Brown, treasurer of the Rhode Island Worsted Company, Stafford Springs, Conn., died at his home in Stafford Springs, June 8th. Mr. Brown had been connected with the Rhode Island Worsted Company as treasurer and manager since the mill was taken over by this company. Previous to that time he had been superintendent of the Manton Mills, Manton, R. I. He was a self-made man, having worked himself up to the position he held at the time of his death. He leaves a wife and one daughter.

Geo. D. Workman, president of the Warrenton Woolen Company, Torrington, Conn., and one of the wealthiest and most prominent men of Torrington, died at his home in that town at the age of 74 years. He was also president of the Torrington Electric Light Company, the Torrington National Bank, and a director of several other corporations. His death was due to heart failure.

Jehiel Hale Simonds, president and treasurer of the Ware House Point Silk Company, Ware House Point, Conn., died at his home, June 14th, in his 84th year. In 1874 the Leonard Silk Company was organized with Mr. Simonds as president. He later bought the interest of John M. Leonard, and the name was changed to the Ware House Point Silk Company. He had been a director of the Broad Brook Woolen Company of Broad Brook, Conn., for a number of years. He is survived by a widow, two sons and four daughters.

Robert H. Jump, a member of the firm of J. R Keim & Company, owners of the Shackamaxon Worsted Company of Philadelphia, died at his home near Atlantic City, N. J. He is survived by a widow, two daughters and one son.

James Whiteley, for 35 years foreman at the Arnold Print Works, North Adams, Mass., died June 21st, aged 57 years. Mr. Whiteley was born in England, and came to this country when he was 21 years of age. He was one of the oldest foremen at the print works.

James G. Garland, who was one of the oldest citizens of Saco, Me., died at his home in that city, having been in feeble health for the past few months. He was born in Saco, Mar. 31, 1827, and was the inventor of an air moistening system which was used extensively in textile mills. By this system water was used instead of steam.

James Rhodes, one of the oldest cotton brokers in the State of Rhode Island, died at his home, 71 Brown St., Providence, June 9, after an illness of about one month. He was 78 years of age and for nearly half a century had been in the broker business in that city.

William H. Brown, who has been identified with the textile machine trade as a builder of carders' tools for more than 35 years, died in Worcester, June 7th, at the advanced age of 90 years. He was born in Edmeston, N. Y., Aug. 3, 1819. He retired from active business two years ago and the business is carried on under the name of the Wil-

WILLIAM H. BROWN.

liam H. Brown Co. by his successors. He was one of the first specialists in tool making. He was not a man who went much outside his own circle of friends and business acquaintances, but was known by name among mill men through his long connection with the industry and was a worthy and esteemed citizen of Worcester. He was one of the oldest continuous advertisers in the Textile World Record and its predecessors, having advertised continuously in its columns for over 35 years.

James Bennett Forsythe, president and general manager of the Boston Belting Company, died June 11th at the Hotel Touraine, Boston, where he had resided for a number of years. Mr. Forsythe had given his whole life service to the company of which he had been for some years the highest official. He entered its employ as a young man and grew up in the business and had been largely instrumental in its great success during the past quarter of a century. He was recognized throughout the rubber goods trade as one of the best informed experts on all subjects pertaining to rubber.

David Yuile, president of the Dominion Textile Company, Ltd., with offices at 112 James St., Montreal, Canada, died at the John Hopkins Hospital at Baltimore, Md., where he had recently gone to undergo an operation. He was accompanied by his wife, three daughters and his brother, William Yuile. The news of Mr. Yuile's death was received by C. B. Gordon, of the Dominion Textile Compay, which announced that the remains were on the way to Montreal. Mr. Yuile was also president of the Diamond Flint Glass Company, and had been president of the Dominion Textile Company since its inception in 1905. He was also a member of the Board of Trade and his advice on industrial and financial questions carried great weight. His death was a sudden shock to the business and financial community.

Harry S. Henry, who at one time entered the employ of the woolen mill owned by his father at 64th and South Sts., Philadelphia, and afterwards became sole owner, but who retired from the woolen business a number of years ago, died from a stroke of apoplexy at his home, 4024 Chestnut St., Philadelphia. He is survived by his wife, who was at his bedside when death came. Mr. Henry became prominent about a year ago when his collection of Barbizon paintings were sold at auction in New York.

Col. Frank W. Cheney, head of the firm of Cheney Bros. silk manufacturers of South Manchester, Conn., died suddenly at his home in South Manchester, May 26. In his death the State loses a man who by common consent has stood for years as a representative of the very best in Connecticut citizenship. He was a director of the N. Y., N. H. & H. R. R., also a director in many important companies. Was a veteran of the Civil War, and 77 years of age.

A. S. Taylor, superintendent of the Cheshire Mills, Harrisville, N. H., died Monday, May 31, at the Keene Hospital, following an operation.

Wm. Connett, superintendent of the warehouse of the American Woolen Company, Summer St., Boston, was instantly killed in Newark, N. J., while running to catch a train. He is survived by a wife and one daughter. His home was at 239 Lincoln Ave., Newark. He was 42 years of age.

Andrew J. Burke, 80 years of age, died at the home of his son, Judge Chas. E. Burke, Springfield, Mass. He spent the early part of his life in Eastern Connecticut. When about 40 years of age he accepted a position as overseer of carding at Pittsfield. For five years he was part owner of the woolen mill at Hancock, Mass. His last position was at Tillotson's Mill, Pittsfield, Mass.

Col. Frank W. Cheney, secretary and treasurer of Cheney Bros., silk manufacturers, died suddenly at his home in South Manchester, Conn., May 27. He was born in Providence, R. I., in 1832, and a graduate of the Brown University. He leaves a widow, eight sons and three daughters.

Walter T. Hanson, president of the Bibb Mfg. Company, Macon, Ga., and son of Major John F. Hanson, president of the Central Chicago Railway & Ocean Steamship Company, died of heart disease at Hotel Belmont, New York City, May 23d. Mr. Hanson and his wife arrived in New York on Tuesday on a business trip. He complained of feeling ill after a day spent among the business houses, and his condition continued to grow worse until a physician was summoned. He was 42 years of age, and is survived by a wife and three children.

New Publications.

[Any work noticed under this head can be obtained through the office of this journal.]

Flax, Hemp and Jute Spinning and Twisting; by Herbert R. Carter; 199 pages, 5 by 8 1/2; D. Van Nostrand Co., New York; price $3.00.

Beginning with an introductory chapter on the raw fibers, flax, hemp and jute, the author treats the subject under the following heads: Haekling, Sliver Formation, Line and Tow Preparing, Gill Spinning, The Flax, Hemp and Jute Roving Frame, Dry and Half Dry Spinning, Wet Spinning, Yarn Department, Manufacture of Threads, Twines and Cords, Rope Making, Mechanical Department, Mill Construction. The book is freely illustrated, and contains a large amount of information, well arranged for study or reference.

A Technical Cyclopedia (Lexikon der Gesamten Technik); by Otto Lueger and associates; Deutsche Verlags-Anstalt, Stuttgart, Germany; complete in 40 parts. Price $100.

We have received parts 34 and 35 of this elaborate work which is being issued in installments. The high standard of preceding parts is fully maintained.

Modern Hat Dyeing (Die Gesamte Moderne Hutfaerberei); by Friedrich Aix; 147 pages, 5 1/2 by 8; Verlag fuer Textil-Industrie, Berlin, Germany.

This is a reprint of a series of articles that appeared in the Textil-und Faerberei Zeitung, Berlin. It deals with the practical side of hat dyeing. The text is in German.

Artificial Silk (Les Soies Artificielles); by A. Chaplet and H. Rousset; 157 pages, 4 1/2 by 7 1/2; Gauthier-Villars, Paris, France. Price $1.50.

This is a concise account of the manufacture of artificial silk dealing with both the chemical and mechanical processes. There are a number of illustrations of machines and apparatus. The work forms a very convenient reference book on a subject on which very little has been written. The text is in French.

Mercerizing and Mercerizing Machines (Le Mercerisage et les Machines a Mercerizer); by A. Chaplet and H. Rousset; 120 pages, 4 1/2 by 7 1/2; Gauthier-Villars, Paris, France. Price $1.50.

This book contains a great deal of useful information on the mercerizing process and the fact that the text is in French should not deter any mercerizer in this country from securing a copy of it. The authors deal with the subject under the following heads: 1. Vegetable Fibers; 2. History of Mercerizing; 3. Selection of Cotton for Mercerizing; 4. The Mercerizing Liquor; 5. Mercerizing Machines; 6. Automatic Machines; 7. Supplementary Processes; 8. Bleaching and Dyeing Mercerized Cotton; 9. Mercerizing Cloth; 10. Other Application of Mercerizing; 11. A Mercerizing Plant.

Textile and Engineering Directory and Year Book; C. D. Kerrawalla, Kalachowki Road, Parel, Bombay.

The fourth edition of this directory contains a list of cotton, silk, woolen and jute mills. To these are added lists of jute presses, oil, sugar, paper, flour, rice, saw and bone mills and the leading mines and iron works in India.

Business Literature.

The Year-Book for Colorists and Dyers; by H. A. Metz.

The eleventh issue of this volume has recently been received. Part 1 gives the usual reference tables which have been a feature since the first issue. Part 2 is devoted to color fastness. Part 3 gives a list of the patents for the year 1908 relating to dyestuffs, process and machines. Part 4, notes on processes and new colors. Part 5, educational, containing notices of the various textile schools. Part 6, list of dyestuff makers and methods. Part 7, miscellaneous notes.

Twenty-five Years of Rope Driving; The Dodge Mfg. Co., Mishawaka, Ind.

A beautifully illustrated catalogue of 103 pages giving a detailed description of the Dodge American system of rope transmission. It gives a comparison of the English and American makes and shows how much superior the latter is.

Rateau-Smoot Turbines and Generators; The Ball & Wood Co., Elizabethport, N. J.

A catalogue illustrating and describing the Rateau-Smoot low pressure steam turbines and generators and giving details of actual tests and details of construction. This company will gladly send an engineer to take up a case in person with a prospective purchaser, and estimate, specifications, etc., will be submitted on application.

From Log to Lineshaft, The Dodge Mfg. Co., Mishawaka, Ind.

A fine 16-page catalogue illustrating and describing from cog to lineshaft the "Independence" wool split pulley. It gives a full account of how this pulley is made and each process of manufacture is clearly illustrated.

The Southern Railway Textile Directory.

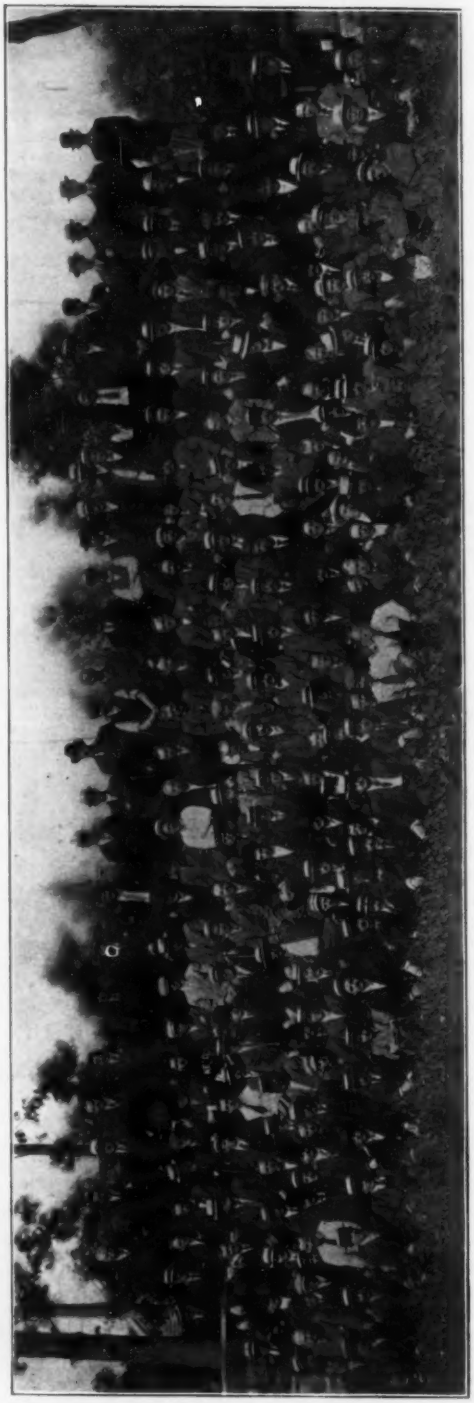
The 1909 edition of the pamphlet directory issued by the Land & Industrial Department of the Southern Railway has been received. It contains a list of the mills in the territory tributary to the Southern Railway as on Jan. 1, 1909, giving the equipment, character of goods manufactured and kind of power employed. As the Southern Railway covers a large part of the South, it is really a pretty complete Southern mill list.

The Dunn Flier; The Textile Machinery Co., 60 India St., Boston, Mass.

An illustrated booket describing the Dunn flier which since its invention some years ago has rapidly gained the favor of cotton spinners in all parts of the country.

Annual Outing of the New England Cotton Yarn Co.

On Saturday, June 19, the annual outing of the New England Cotton Yarn Co. at Sylvan Grove, near New Bedford demonstrated for the fifth time the value of this annual feature, not only in giving several hundred human beings a day of pleasure, but in promoting good feeling among the managers of a great manufacturing corporation whose success depends in great measure on cooperation among its employes by which one and all work for results. The outing was held in a very pleasant grove half way between New Bedford and Taunton. Those in attendance included the leading executive officers of the company, President Weld, Vice President Baylies, Assistant Treasurer Booth, General Manager Sharp, General Superintendent Glennon, a large number from the company's sales departments in various cities, and from the mills, making in all about two hundred and fifty people. The arrangements were in charge of a committee consisting of Chairman E. H. Cook, T. E. Hatch, S. H. Roberts and F. C. Sawtelle, and consisted of two ball games, tug of war, fat men's race, clerk's race, three legged race, sack race and free for all race. There were also free for all facilities for quoit pitching and bowling. An excellent clam bake, embellished with lobsters, blue fish, sausage, tripe, watermelon and accessories, was a pleasant interruption to the sports. The guests took their departure as the shades of evening were falling, tired out by a day's round of pleasure that will last long as a pleasant memory and serve to promote kindly feelings toward each other and the company that was the host.



OUTING OF THE NEW ENGLAND COTTON YARN COMPANY AT SYLVAN GROVE.

Twenty-Five Years of Rope Driving.

The Dodge Mfg. Co. of Mishawaka, Ind., have published a new book containing 104 pages, in which the development of the American system of rope transmission is reviewed from its introduction by the Dodge Mfg. Co. in 1883 to the present time. It contains valuable information for the mechanical engineer and the power user generally. The book is profusely illustrated with views of actual installations, and has numerous line drawings showing the design and arrangement of the drives. It is free to mill and factory managers, superintendents and engineers who are interested in the mechanical transmission of power.

Hygrosso.

John W. Fries, New York, maker of the Hygrosso Humidifiers, reports that they have received another order from the Fall River Iron Works Co., Fall River, Mass., making the fifth complete installation for this plant since January, 1909. There is such an interest shown in these humidifiers that demonstrating offices are to be established in Boston, Mass., and Charlotte, N. C., and arrangements have been made for the factory to triple its production on the Hygrosso.

OUTING OF THE NEW ENGLAND COTTON YARN COMPANY AT SYLVAN GROVE.

Anti-Rust.

When a flood came and covered the floor of the machine shop of the Birmingham Iron Foundry, at Derby, Conn., those in charge were glad to note the practical working test that had been unwittingly given to a rust preventive known as Anti-Rust, which had been used to protect the highly polished rolls of a 3-roll calender, standing on the erecting floor. When the water, which had reached the height of the lower roll, had subsided, it was found on examination that the delicate surface protected by the Anti-Rust was not harmed in any way.

Reeling Specialists.

The Central Warp & Cone Mills, Central Falls, R. I., Thomas Astley, proprietor, make a specialty of reeling direct from warps, in one operation, even tension skeins with single, double or any number of ends on a skein. They advise having mercerizing done by them in warp form and reeled into skeins by Mr. Astley's invention which he claims is the only warp reeling machine in the world. They do all sorts of beaming, cone winding, jack spooling and reeling.

Dissolution of Partnership.

Philadelphia, May 28, 1909.

The following notice has been issued to the trade:

This is to notify our friends that Henry J. Bickley and Theo. H. Moyer, trading as the National Soap Mfg. Co. of Philadelphia, Pa., have dissolved partnership and hereafter the said Henry J. Bickley, who has purchased the said Theo. H. Moyer's interests in the said National Soap Mfg. Co., will continue the business at the same location under the title of National Soap Mfg. Co., assuming absolute control of the entire business.

Thanking our friends for all their kindness and trusting to continue in their good favor, we remain,

Respectfully yours,
National Soap Mfg. Co.

The Stone and Webster Engineering Corporation has recently placed an order with the American Ship Windlass Co., Providence, R. I., for three Taylor mechanical stokers, for installation at the Dallas Electric Light and Power Plant, for which six similar stokers were previously purchased.

Recent Orders.

Among the orders recently received by the Crocker-Wheeler Company, of Ampere, N. J., are: One 140 k. w., 240 volt generator and six 15 h. p., 230 volt motors to the Napier & Mitchell Manufacturing Co., Belleville, N. J.; one 125 k. v. a, 3 phase, 60 cycle, 240 volt alternating current generator to be installed at the plant of the Cleveland Worsted Mills Co., Cleveland, O.; one 165 k. w., 3 phase, 60 cycle, 240 volt generator to the Miami Valley Knitting Works, Hamilton, O.; two 110 h. p., 230 volt, D. C. motors were sold to the Illinois Steel Co., South Chicago, Ill.

Cotton Merchants.

Messrs. Mohr & Fenderl have opened offices at 84 State St., Boston, Mass., for the importation and general handling of Egyptian cotton. The office will be under the management of Mr. George St. Amant, who will have charge of the business in the United States and Canada. Mr. St. Amant has been in the business for eighteen years, having recently resigned from Stephen M. Weld & Co. to take the new position. His experience and acquaintance in the trade should be a guarantee of his success.

Sizing and Finishing.

The Arabol Mfg. Co., 100 William St., New York, are prepared at all times to assist manufacturers in remedying the difficulties that may arise in sizing and finishing. Their long experience, scientific methods and modern facilities in both the factory and laboratory fit them for this work.

Turbo Humidifiers.

Among the recent contracts closed by the G. M. Parks Co., Fitchburg, Mass., is one for the equipment of one of the mills of the Columbian Mfg. Co. of Greenville, N. H., with the Turbo Humidifier system, together with air cleaning feature. This is one of the Bliss Fabyan plants.

Removal Notice.

The B. F. Sturtevant Co. has removed its New York office from the Engineering Building, 114 Liberty St., to 50 Church St.

Karl M. Way, E. M., formerly assistant engineer, fuel testing branch, U. S. Geological Survey, engaged in mine inspection, mine sampling, and studies of coal preparation in all important coal fields of the United States, has recently been appointed assistant mining engineer upon the staff of the fuel engineering department of the Arthur D. Little laboratory of engineering chemistry, Boston, Mass. Mr. Way is a graduate in mining engineering of the Ohio State University.

The Jackson Co. of Nashua, N. H., have recently placed with the G. M. Parks Co. of Fitchburg a second order for the Turbo Humidifier system of air moistening. The G. M. Parks Co. have also recently closed the contract for equipping the plant of the West Boylston Mfg. Co., Easthampton, Mass., with the Turbo Humidifier.

Lonsdale Co., Lonsdale, R. I., have placed a repeat order for humidifiers with the American Moistening Co.

William Whitman & Co.

After July 1, the firm of William Whitman & Co. will continue the offices at Atlanta, Baltimore, Boston, Charlotte, Chicago, New York, Philadelphia and St. Louis, formerly maintained by the firm of Harding, Whitman & Co. The new firm continues the business of Harding, Whitman & Co., with the exception that after June 30 no orders will be taken for the product of the Whitman Mills, New Bedford. The mills for which the firm will sell include the Arlington Mills of Lawrence, the Manomet Mills, and the Nonquit Spinning Co. of New Bedford, the Eddystone Mfg. Co., and the new Nashawena Mills, New Bedford, as well as some Southern cloth and yarn accounts.

The members of the firm of William Whitman & Co. are William Whitman, Jr., Arthur T. Bradlee, Malcolm D. Whitman and Louis H. Fitch.

Harding, Tilton & Co.

Charles L. Harding, formerly of the firm of Harding, Whitman & Co. and Newell W. Tilton have established a new dry goods commission house with main offices at 25 Arch St., Boston, and 66 Leonard St., New York. They will have the product of the Whitman Mills of New Bedford, the new Holmes Mfg. Co., New Bedford, the Tilton Mills, Valley Falls, Rhode Island, and expect to take on some fine cotton yarn accounts.

The Regulation of Moisture in Textile Mills.

John W. Fries, 45 Lafayette St., New York, is issuing a booklet pointing out the advantages of humidification and the special advantages of the Hygrosso System, telling what it does and how it does it.

Trucks for Yarn Drivers.

When Frank Bailey, Cedar Brook, N. J., began to build yarn drying machinery, he found there was a need for trucks especially designed for this purpose and for general use in dye houses. He had been all his life connected with this branch of mill work and knew the actual every-day requirements in this line and his trucks are much liked by his customers.

Hungerford & Terry Incorporate Business.

Hungerford & Terry, Filtration Engineers, 1414 Pennsylvania Bldg., Philadelphia, Pa., on account of the large number of orders taken by them in the past three months, have found it necessary to incorporate their firm to handle the large volume of business now on hand, and are now doing business under the name of Hungerford & Terry, Inc. There is no change in the personnel of the concern, Mr. Churchill Hungerford being the president, and Mr. Arthur L. Terry, Jr., general manager.

They are constructing filters and water softeners under the same patents, etc., and continue making a specialty of water purifying apparatus for the textile trade.

A Large Humidifying Contract.

A few years ago coarse goods cotton manufacturers thought that artificial humidifying was entirely unnecessary. Some of them believed that fine cotton goods required a certain percentage of humidity, but the coarse goods men thought they were immune. An evidence that the coarse goods men also appreciate more and more the advantages to be derived from the proper air conditioning, is the recent contract made by the Sagamore Manufacturing Company of Fall River, Mass., with the Carrier Air Conditioning Company of America, 39 Cortlandt St., New York.

This company is building a new mill 480 ft. long by 156 ft. wide and three stories. The first and part of the second floors will be weave rooms, the card room being on the remainder of the second floor, and 50,000 spindles on the third floor. The entire plant will be heated, ventilated, cooled and humidified from one set of apparatus placed in the engine room. This apparatus is arranged so that the humidity on each of the different floors will be automatically regulated, each independent of the other. This is perhaps the largest and undoubtedly one of the three largest humidifying contracts which have been let during the present year.

In addition to this contract, the Carrier Air Conditioning Company of America also report procuring orders for the complete new building of the Brighton Mills, Passaic, New Jersey, where carding, spinning, warping and weaving departments will also be handled from one apparatus, also for the Susquehanna Silk Mills at Lewiston, Pa., and the Farr Alpaca Company's new weave shed at Holyoke, Mass.

Busy Machine Works.

The Oswald Lever Company, Lehigh Ave. and Mascher St., Philadelphia, builders of textile machinery, report that they are working full time on their line of improved winding and warping machines, creels, chenille cutting machines, filling bobbin or quill winding machines, etc. They have been receiving, recently, many orders from the silk trade for their high speed cross quiller which winds from skeins or mule cops onto quills or paper tubes and which has a running capacity of from 1,800 to 2,400 revolutions, which is giving entire satisfaction to those mills where it has been installed. They are also builders of a variable speed bobbin machine for large bobbins used in knitting mills, dresser spooling machines and reeling machines, all of which are in successful operation in many mills in this country.

Chicago Branch.

The American Pulley Co. of Philadelphia have leased a store at 139 South Clinton St., Chicago, which they opened July 1 with a complete assortment of their wrought steel belt pulleys and sash pulleys.

Lengthening the Life of Timber.

With all the agitation in Congress and in the Legislatures of the different states for the preservation of our forests which are being so rapidly devastated, it is strange that more attention has not been paid by manufacturers and users of timber generally to preserve the life of the timber that they use. Some of the more progressive concerns have been doing it for years and getting the benefits in freedom from replacement and lessening the repair expense.

The Kyanizing process and treatment of lumber with creosote has been well known and extensively used for many years, but most processes of this kind in use have the disadvantage of requiring the treatment at some place especially designed for the purpose and in localities remote from such plants where the cost and bother of sending the lumber to be treated often prevents its use.

We understand that the Carbolineum process of wood preserving overcomes this objection as the timber can be readily treated on the spot where it is to be used. Some mills that make a point of keeping their plants up to date and replacing worn out flooring, sills, joists, etc., have found it convenient to maintain a simple open tank outfit, for treating the lumber that they use. The following letter is from a manufacturer who has been using it in the dye house:

Cleveland, O., May 22, 1909.

Carbolineum Wood Preserving Co., 347 West Broadway, New York City.

Dear Sirs: We are in receipt of your favor of the 20th, and in response would say that we have been using your Avenarius Carbolineum for the past four to five years in various departments in our plant, especially in our dyeing department, and the results are very satisfactory.

We have used this Carbolineum on some of the dye vats, also on our dyeing machines, and, for your information we desire to state that we only applied the Carbolineum on the exterior of our dye vats, although on the dyeing machine, which is partly a frame and iron construction, we have applied the Carbolineum both on the out and inside and the treatment did not affect the dyeing liquid or raw stock in any manner. However, we would advise, before starting the dye vat after the Carbolineum is applied, to thoroughly boil out the vat with soda in order to take off the surplus greasy substance. This treatment on wood in damp and wet places we find of great value and it prolongs the life of the wood considerably compared to wood that is not preserved. Before using your Carbolineum we were obliged to renew our dye house floor every year, but since treating this floor with your Carbolineum would say that we have a floor now in use over a period of three years, and is still good for a longer period.

If there is any further information that you desire in this connection, we are at your service.

Respectfully yours,

The National Woolen Co.,

I. C. Glauber, Mgr.

The Hydraulic Press Mfg. Co. are furnishing complete hanging and finishing equipment for the famous Royal Tailors' plant of Chicago. This includes a hydraulic press with trucks and automatic hanging device and hanging racks.

At a special meeting of the stockholders of the Cornell Mills, Fall River, Mass., Robert W. Zuill was appointed treasurer pro tem to fill the vacancy caused by the death of Fred E. Waterman.

Geo. A. Rowe, for the past twenty years overseer of mule spinning at the Hope Webbing Company, Providence, R. I., has severed his connection with that company.

David D. Miller has severed his connection as superintendent of the Portland Silk Company, Middletown, Conn. He has no definite plans for the future.

H. D. Burns, overseer of carding at the Natchez Cotton Mills, Natchez, Miss., has severed his connection with that company.

W. B. Fritty has been appointed superintendent of the Utica Cotton Company, Utica, N. Y. He comes from Easthampton, Mass.

F. E. Clements has accepted the position as superintendent and general manager of the Prudential Worsted Company, Philadelphia, Pa.

Fred'k Haigh, assistant superintendent at the Slatersville Finishing Company, Slatersville, R. I., has severed his connection with that company.

John Sullivan has accepted the position as overseer of wool sorting at the Providence Combing Company, Providence, R. I. He comes from the Riverside Mills, and succeeds Norris Bentley.

Geo. Uhlig has accepted the position as overseer of dyeing at the Andrew Mills, Frankford, Philadelphia, Pa.

Herman E. Shulze has accepted a position in the designing department at the Assabet Mills, Maynard, Mass. He was formerly employed at the Greenville Woolen Company, Greenville, R. I., as designer.

F. E. Chesteen, overseer of spinning at the Cherry Cotton Mills, Florence, Ala., has resigned.

J. H. Cunningham has been appointed overseer of carding at the Kansas City Cotton Mills, Kansas City, Kan. He comes from Wake Forest, N. C.

J. L. Jones has been appointed overseer of weaving at the Alabama Cotton Mills, Spigner Station, Ala.

F. J. Warren has accepted the position as master mechanic at the Connecticut River Power Company. He was formerly employed at Hinsdale, N. H.

Geo. McKenzie has been engaged as overseer of dyeing at the Otis Company, Ware, Mass., to succeed Nelson Williams. He comes from the Brainerd & Armstrong Company, New London, Conn.

Commencement Exercises at the Textile Schools.

The Bradford-Durfee Textile School.

The graduation exercises of the Bradford-Durfee Textile School, Fall River, Mass., were held on Tuesday evening, June 1, 1909, at the school. President Leontine Lincoln extended a cordial welcome and spoke in part as follows: "On June 1, 1908, there were 544 students in the school. On June 1 of this year there were 749. There has been a marvelous increase in attendance since the school started five years ago, when there were but 168 students. The administration of the school has been conducted by the same efficient corps of instructors, with few exceptions." Mr. Lincoln also spoke of the new four-story school to be erected, the equipment of which will cost $36,000. The complete program is given below:

Overture—Orpheus Orchestra.

Address of Welcome—Leontine Lincoln, President of the School.

Address by Harvey N. Shepard of Boston.

Selection—Orpheus Orchestra.

Presentation of diplomas and certificates by the President of the School.

Mr. Shepard's address was listened to with a great deal of interest, pointing out as it did the value of skill in our industries, and said it is especially important to this commonwealth, for upon it we must depend if the preeminence of our manufactures is to be sustained.

The graduates with courses completed are as follows:

Day Course—Three Years—Diploma. General Cotton Manufacturing—Richard Greene Howland Knight, George Wanton Spalding.

Evening Course—Certificate. Picking and Carding—James A. Fairhurst, Samuel A. Fairhurst, William A. Langfield, Daniel W. O'Neil, Robert Salter, William Sargent, Charles O. Schlemmer.

Ring Spinning—Robert J. Arden, Alphonse Blanchette, Matthew H. Bower, Joseph Brabner, Joseph Briand, Alexander J. Burns, Peter Charest, Joseph Corner, Henry T. Haley, Herbert M. Harvell, Robert Healey, Henry Lord, Theodore Peladeau, Ralph Aldrich Reynolds, Frank St. Pierre, Jr., Walter Smalley, James B. Sullivan, Luke Suthers.

Mule Spinning—Leonard Cook, Magnus Inberg, William H. Seaman.

Mill Calculations—Louis Philip Drapeau, Edward L. Hinchey, Albert Lightbown, Frederick J. Norris, Rufus P. Walker.

Plain Loom Fixing—William Ainsworth, Charles Wesley Anderson, William Baron, Richard S. Barrett, Richard F. Barry, Joseph Boardman, John Burton, John J. Bury, Fred Chadwick, Ernest Chesworth, Odilon Decelle, Edward F. Driscoll, Michael Frank, Louis Garon, Charles Gregory, John T. Gudgeon, William Haigh, Robert Healey, Charles Holderness, Joseph James, Theobaul Juneau, Thomas Keavey, Frank Kelsall, William Kempster, Harold Knowles, Elzear Lavoie, John Lynch, Edward McConnell, Stephen McCloskey, Edouard Marcoux, John W. Mather, William Monaghan, Charles Mulholland, Eddy A. Nadeau, John F. M. O'Loughlin, Thomas Francis O'Neil, Cummings Parkinson, William Henry Parkinson, Louis Percy, Joseph Perry, Francis J. Phelan, Louis F. Phelan, Albert E. Piggott, Herbert Robinson, Arthur St. Germain, Harry H. Scott, Albert Shovelton, Joseph Shufflebotham, George A. Siddall, Edmund Singleton, William Singleton, James E. Standing, Wilfred Taylor, George H. Tolley, Alonzo H. Willett, John J. Woolley.

Box and Dobby Loom Fixing—Christopher T. Ainsworth, Thomas Billington, Claude Boocock, Adam Brooks, Samuel Campbell, John W. Davis, Richard Eatough, William Fellowes, Louis F. Harrington, James Haigh Harrison, James Heywood, John J. Higginbottom, John Lynch, William J. MacConnell, Robert Mellor, Henry J. Porter, John W. Smith, William T. Spedding, Luke Suthers, Enoch Windle, Stephen Young.

Jacquard Loom Fixing—Arthur Brickhill, Samuel Brierley, John S. Gardner, Joseph A. Healey, Alfred Hubert, Frank A. Munyon, Herbert Pemberton, George E. Robinson, Edmund Scholes, John R. Walmsley, Thomas A. Wilkinson.

Dobby Designing—Robert H. Dunnigan, James T. Eccles, William Edward Jones, William Kennedy, Fred Lightbown, William H. Roberts, Thomas Shaw.

Jacquard Designing—Dougal Burnside, James W. Lenaghan.

Elementary Designing—Charles E. Brady, George Bury, William F. Glen, Jr., George B. Hodgson, Magnus Inberg, Joseph C. Lavoie, James Stewart.

Lowell Textile School.

The commencement exercises of the class of 1909 of the Lowell Textile School were held June 3, 1909.

Following was the order of exercises.

Music—Hibbard's Orchestra.

Address—President A. G. Cumnock.

Abstract of Thesis: "A Comparison of Single Carding, Double Carding and Combing." (Read by W. L. Parkis.) Carl H. Potter, William L. Parkis.

Abstract of Thesis: "The Manufacture of Merino Half Hose." (Read by A. T. Mullen.) Almonte H. Fairbanks.

Address—Mr. James J. Storrow, President Boston Merchants' Association.

Music—Hibbard's Orchestra.

Abstract of Thesis: "The Art of Producing Variety of Color in Tapestries." James K. Laughlin.

Abstract of Thesis: "Efficiency Test of an Electrolytic Cell, for the Manufacture of Sodium Hypochlorite Bleach Liquor." J. C. Wood.

Presentation of Medal of the National Association of Cotton Manufacturers.

Announcement of Awards for Proficiency in First, Second and Third Year Chemistry.

Presentation of Diplomas—Charles H. Eames, Principal.

Music—Hibbard's Orchestra.

The Principal, Chas. H. Eames, of the school, made the concluding remarks, closing as follows: "Many young men from school entering life's field of industry are frequently not willing to stand rebuff, they will not stand 'each sting, that bids not sit, not stand, but go.' You are standing before an examination; the world, the industry, and the manager of the industry are to be the examiners. If you have learned while here not only the technique, but how to be commanded and to obey; if you have acquired the faculty of knowing how to be commanded and to obey; if you have acquired a personality which will command respect of your fellowmen, you need not fear the result of the report which may come to you. You must first learn how to serve before you can lay claim to any position of authority."

The following is the list of graduates of the day class, with the titles of their theses:

Arthur Travena Brainerd, Chemistry and Dyeing, Bradford, Mass. "Resist Dyeing."

Harold Wright Conant, Cotton Manufacturing, Littleton Common, Mass. "The Relation of Twist and Strength."

Almonte Harrison Fairbanks, Wool Manufacturing, Wakefield, Mass. "The Manufacture of Merino Half Hose."

William Gladstone Ferguson, Textile Designing, Springvale, Maine. "Shaded Effects Obtained by the Sateen and Plain Weaves."

Starr Hollinger Fiske, Wool Manufacturing, Winthrop, Mass. "The Manufacture of Fancy Worsteds (Men's Wear)."

Arne Kolthoff Gyzander, Chemistry and Dyeing, Wilmington, Mass. "A Photo-micrographic Study of the Textile Fibers."

Francis Crawford Holden, Chemistry and Dyeing, Lawrence, Mass. "Application of Titanium Compounds in Textile Coloring."

Harry Pearson Kay, Wool Manufacturing, Oxford, Maine.

James Knowlton Laughlin, Textile Designing, East Greenwich, R. I. "The Art of Producing Variety of Color in Tapestries."

Alfred Sandel Levi, Chemistry and Dyeing, New York City. "The Discharging of Insoluble Azo Colors."

Archibald Lee Mason, Textile Engineering, Billerica, Mass. "Calibration of a Direct Current Motor and Power Tests on Ring Spinning Frame."

Arthur Thomas Mullen, Wool Manufacturing, Dorchester, Mass.

John Douglas Newall, Chemistry and Dyeing, Lawrence, Mass. "Comparison of the Coloring Properties of Cutch and Sulphur Brown."

William Lawton Parkis, Cotton Manufacturing, Whitinsville, Mass. "A Comparison of Single Carding, Double Carding and Combing."

Chester Chapin Pease, Cotton Manufacturing, Lowell, Mass.

Carl Howard Potter, Cotton Manufacturing, Ludlow, Mass.

Walker Flanders Prescott, Chemistry and Dyeing, Lawrence, Mass. "A Study of Certain Relations which Exist between Coloring Matters and Cotton and Wool."

Harold Fairbairn Saunders, Chemistry and Dyeing, Andover, Mass. "Estimation of Hydrocarbon Oils in Wool Lubricants."

Ira Aaron Stone, Chemistry and Dyeing, Beachmont, Mass. "Waterproofing of Cotton Cloth."

James Carleton Wood, Chemistry and Dyeing, Haverhill, Mass. "Efficiency Test of an Electrolytic Cell for the Manufacture of Sodium Hypochlorite Bleach Liquor."

Awards for Proficiency in First, Second and Third Year Chemistry.

First—Ten dollars to the student taking the regular Chemistry and Dyeing Course in the Lowell Textile School, who shall be considered as having attained the highest scholarship in First Year Chemistry. Awarded to Leon W. Sidebottom.

Second—Five dollars to the student taking the regular Chemistry and Dyeing Course in the Lowell Textile School, who shall be considered as having attained the second highest scholarship in First Year Chemistry. Awarded to Walter J. Bailey.

Third—Ten dollars to the regular student of the Chemistry and Dyeing Course who shall be considered as having attained the highest scholarship during his second year. Awarded to Frederick W. C. Robson.

Fourth—Five dollars to the regular student of the Chemistry and Dyeing Course who shall be considered as having attained the second highest scholarship during his second year. Awarded to Frank L. McCool.

Fifth—Ten dollars to the regular Chemistry and Dyeing student of either the second or third year class who shall write the best article upon one of five subjects to be specified by the instructing staff of the Chemistry and Dyeing Department. Awarded to Alfred S. Levi.

Sixth—Twenty dollars to the regular student in the Chemistry and Dyeing Course who shall present the best thesis preparatory to graduation. Awarded to J. C. Wood and H. M. Smith.

The above sums to be invested in books.

Medal of the National Association of Cotton Manufacturers awarded to Carl H. Potter.

The Philadelphia Museum and School of Industrial Art.

The graduating exercises of this school, which includes the Philadelphia Textile School, were held in Horticultural Hall, Thursday evening, June 3, 1909, at eight o'clock. The program was as follows:

Music by W. R. Stobbe's Orchestra.

Introductory Remarks by the Principal.

Address by Dr. James P. Haney, Director of Art and Manual Training, Public School of New York City. Subject, "The Art Heritage of Industry."

Awarding of Diplomas and Prizes.
Address to the Graduates by President Theo. C. Search.
Music by the Orchestra.

PRIZES.

The prizes were as follows: Associate Committee of Women's prize to Samuel Franz for work in industrial drawing. Second prize awarded to Philip H. Pratt and third prize awarded to Edith G. Daggett. The Mrs. Jones Wister prize awarded to Alice W. Donaldson, Pliny J. Wilson and Helen Boyer for decorative landscapes. The Emma S. Crozer price awarded to Horace W. Hardy for the best work in drawing. The Emma S. Crozer prize awarded to Elsa Feucht for the best group in modeling. The Mrs. Francis F. Milne prize awarded to Harry S. Ziegler, Jr., for work in original design. The John J. Boyle prize awarded to Alice T. Miller for general excellence in modeling. The Caroline A. Magee prize awarded to Mary B. Reinhardt for original design for lace. The Frederic Graff prize awarded to Peter F. Getz for architectural design. The Henry P. Leland prize awarded to Harriet B. Burt for best work in illustration. Girls' Industrial Art League prize awarded to Julia McCoy for pottery. The F. Weber prize awarded to Harry A. McGrath for best work in instrumental drawing. The John Harrison prize awarded to Edward I. Ingram for best work in furniture. The Emily Leland Harrison prize awarded to Harry B. Clems for work in wrought iron. The Mrs. Jos. F. Sinnott prize awarded to Stewart C. Hinds for best executed piece of garden pottery. The G. Gerald Evans prize awarded to Frances N. McAleet for a piece of cabinet work. The National Association of Cotton Manufacturers' medal for general excellence awarded to Theodore H. Schumann. The Textile World Record gold medal awarded to Wm. C. Thudium for general excellence and thesis. The Henry Friedberger memorial prize for general excellence awarded to Wilbur L. Kirby.

FULL COURSE CERTIFICATES.

Day Classes. Cotton Course (Two Years)—William Wylie Arnold, Jr., Thomas Holt Haywood, James Thomas McAden, Edward John McMillan.

Wool Course (Two Years)—Thomas Michael Corcoran, Aloysious Joseph Eilers, Frank Dennison Levering, Albert Lincoln Mellor, Lester Sterzelbach, Frederick Elsworth Wasson.

Yarn Manufacture (Two Years)—Howard Severn Regar.

PARTIAL COURSE CERTIFICATES.

Day Classes (Two Years of the Regular Course)—Herbert David Bendheim, Harry Conrad Brodbeck, Jr., Arthur Maurice Brown, Harry George Brown, Edgar Walker Harris, Stanley Hewlett Hart, Lewis Arthur Hird, Esmond Doane Keach, Stewart McConaghy, Vincent Lucas McElroy, Earl Lawton Miller, Herbert G. Mortland, Frank Joseph Nolan, Jr., Edwin Oppenheimer, Walter Maurice Steppacher, John Gammel Stewart, Samuel Scott Stewart, Hubert Cable Sykes, Diaunyouen Oscar Sze, George Thomas Volkhardt, Carl Otto Walliser, Lawrence Albert Wechsler.

Two Years of the Chemistry, Dyeing and Printing Course—Solomon Rivelis.

On Thursday afternoon the Alumni Association of the Textile School held an informal reunion at which the following papers were presented: "Smiles-System," by Albert S. Howard. "Ten Years of Evolution in Men's Wear Fabrics of a Fine Grade," by George F. Haigh. "What the Textile School Aims to do for the Industry," by Chas. W. Butterworth. "Reveries of a Designer," by E. R. Switser. "The Patenting of Modern Textile Inventions," by Augustus B. Coppes.

On Friday morning the members and their friends went on their sixth annual cruise down the river to the summer home of the Athletic Club of Philadelphia, where games of all kinds were entered into with a great deal of spirit.

In the evening a banquet was held at the Hotel Majestic, tne speakers and their subjects were as follows:

Honorable John E. Reyburn, Mayor of Philadelphia: "Welcome."

Mr. William Whitman, President of the National Association of Wool Manufacturers: "The Requirements of the Textile Worker of the United States."

Mr. Richard A. Strong, of Strong, Hewat & Co., North Adams, Mass.: "Styles and Styling in Men's Wear Fabrics, with Special Reference to Woolens."

Mr. J. R. MacColl, ex-President of The National Association of Cotton Manufacturers: "National Characteristics and Methods in Relation to Textile Manufacturing."

The addresses of Mr. Whitman, Mr. Strong and Mr. MacColl, coming from such representative men in the trade, were listened to with a great deal of interest.

The New Bedford Textile School.

The graduation exercises of the New Bedford Textile School were held Friday evening, June 18, 1909, using for the first time their own school hall. President Hatch in his annual address said in part:

"It is gratifying to be able to report that the school is growing in numbers and efficiency. The attendance in the day classes during the year 1908-09 was 40, as compared with 26 for 1907-08, and in the evening classes 509, as compared with 389.

"The school building has been enlarged twice since the school was opened and still is inadequate when the evening classes are in session, and it becomes necessary to enlarge again. The state has just granted an appropriation of $21,000 for the purchase of land for the enlargement of the school, and the trustees have secured for that purpose two lots adjoining the school on the north, with a frontage of 116 feet on Purchase St. and containing 47 and a fraction rods of land.

"When this addition is made to the school it

will be unsurpassed by any school in the world in the facilities offered to students for acquiring a knowledge of the manufacture of cotton textiles, if that is not true today. This is no idle boast, but is the testimony of many who have visited the school, both from home and abroad, and who are competent to judge. The knitting department alone has no rival."

Lieut.-Gov. Louis Frothingham was then introduced. In his address he congratulated the students and teachers on the progress of their institution. William Whitman was the next speaker and he read a paper on "Opportunities of the Textile Workers," which was received with a great deal of interest.

THE GRADUATES.

Day Classes—Diploma Courses. General Cotton Manufacturing: Frederick J. Bister, Arthur Fuller Spare. Designing: Alton Winfield Chase, Milton Chase Devoll, Clifford Linnell White. Chemistry and Dyeing: George Campbell Urquhart. Seamless Hosiery Knitting: Max A. Freschl, Philip C. Gilkey, Charles Pittle. Latch Needle Underwear Knitting, also Carding and Spinning: Albert G. Neel, Arthur E. Snyder.

Certificate Course—Carding and Spinning: William James Blades.

Evening Classes—Certificates. Cotton Picking, Carding and Combing: Elliott H. Barnwell, Franklyn J. Davies, John Albert Lee, Robert Martin, Henry C. Warburton, Benjamin Woodsome, William McClure.

Mule Spinning: Edwin Biltcliffe, Eadeauf Chadwick, Wallace Copeland, William Hettinger, William H. Kelley, Austin G. Ogden, John Platt, Fred Sutcliffe, Harold G. Connolly.

Ring Spinning: John C. Astley, Manuel T. Brazil, Jr., Aleanah Hesford, L. A. Plummer, Jr., Edward Riley, John Riley, Hugh J. Rooney, Joseph A. Russell, Dennis Sweeney, Thomas B. Taber.

Cotton Sampling: James H. Bruce, Frank D. Fuller, Anthime Labadie, James Martin, Harry LeRoy Ray.

Warp Preparation: Frank Buckley. Eli Binns, Edward Carroll, Christopher Cheetham, Wilfred Fish, John Gillibrand, Haworth Greenwood, Samuel Harwood, John A. Rothwell.

Plain Weaving and Fixing: Albert Ashton, James Ashworth, Frederick R. Brown, Joseph S. Cabral, Louis Cocker, Raymond Courteau, William Couza, Henry Doyle, James Farran, William Fell, Thomas Fenner, John Hawkswell, James Holden, George Malone, William Malone, Charles E. Mason, William M. Miller, John Sylvia Neves, Thomas Neville, L. A. Plummer, Jr., Eugene Rushlow, Robert Sibor, William Smith, John Thompson, Alexander D. Wallace, Harold T. Watson.

Fancy Weaving and Fixing: Heaton Atkinson, John Bradley, Esau Carter, John A. W. Cryer, Ralph W. Fletcher, William Hendra, George T. Howard, John Isherwood, Joseph E. Leaver, William Mitchell, Luke Murphy, George Oldham, Peter F. Slater, Antonio J. de Souza, Joseph Taffe, John H. S. Wignall.

French Class—Weaving and Fixing: France Desmarais, Adelard Fleury, Torsine Goyer, Alfred Lague, Oscar Lavoie, Geoffrey La Liberty, Oliver Lemieux, Eduard J. Macy, Arthur St. Aubin.

Portuguese Class—Weaving and Fixing: Jose de Cartro Adao, Joseph A. Brown, John Cunha, Frank Enos, Joseph Fernandez, Antone Gonsalves, Charles Goulart, J. S. Ados Juniar, Manuel Mederous, Domingo Mello, Frank S. Mello, Frank Perry, Manuel Robelo, Joseph P. Simmons, Antone B. Souza, Manuel G. Souza, John Souza, Antone G. Sylvia, Joseph Sylvia, Manuel G. Sylvia.

Designing: John Thomas Carter, Lewis Hamer, Norbert Nemec, Axel Olson, Otto Palme, Robert E. Townsend.

Mill Calculations: William J. Almond, John H. Clarke, Arthur A. Davies, James Halsall, Harry Layfield, William T. Morgan, Thomas H. Parkinson, James Woollam, Joseph Woollam, Jr.

Mechanics and Drawing: Adam Bayreuther, Allan P. Bessey, Robert Alfred Bond, Albert Bradley, S. E. Cunningham, James H. Jack, William Kenworthy, Manuel L. Lima, Jr., Lauchlin A. Lipsett, John Appleby Mercer, Frank E. Noland, Charles Rankin, William H. Sheehan.

Water Softening.

Wm. B. Scaife & Sons Co., Pittsburg, Pa., manufacturers of the Scaife and We-Fu-Go water softening, purifying and filter systems, have completed an addition to their present plant at Oakmont, Pa., to accommodate their increased business in the building of systems for the purification of water for steam boilers, industrial and domestic uses. The investigation on the part of manufacturers using steam boilers and water in industrial processes, has meant a continued increase in the number of We-Fu-Go and Scaife water purifying systems installed. The following is a list of recent orders taken:

Fox River Paper Co., Appleton, Wis., 1,875 h. p. We Fu-Go; Pittsburg-Buffalo Co., Burgettstown, Pa. (3d order), 1,000 h. p. We-Fu-Go; American Sheet & Tin Plate Co., Vandergrift, Pa. (20th order), 15,000 h. p. We-Fu-Go; Penna. Salt Mfg. Co., Natrona, Pa. (2d order), 5,000 h. p. We-Fu-Go; Eastman Kodak Co., Rochester, N. Y. (3d order), two 6,000 gal. per hr. Mechanical Gravity Filter; Verner Coal & Coke Co., Bulger, Pa., 1,200 h. p. We-Fu-Go; Warwick Iron & Steel Co., Pottstown, Pa., 6,000 h. p. We-Fu-Go; The Youngstown Sheet & Tube Co., Youngstown, O. (2d order), 8,000 h. p. We-Fu-Go; Fuchs & Lang Mfg. Co., Rutherford, N. J., 500 h. p. syphon system; New England Butt Co., Providence, R. I., 300 h. p. Scaife automatic system.

Large Order for Humidifiers.

The Dan River Power & Mfg. Co., at Danville, Va., has just placed a large contract for humidifying equipment of their new plant, awarding same to the G. M. Parks Co. of Fitchburg, Mass., for Turbo Humidifiers. This equipment calls for approximately five hundred heads and is one of the largest received for this system.

Recent Textile Patents.

CARDING MACHINE. 923,003. William Barber, Bridgeport, Pa.

FABRIC. 922,811. Lewis Puryear, Mebane, N. C.

FABRICS. Apparatus for Impregnating and Extracting Liquids from. 923,971. H. Hey.

FABRICS. Joining or Connecting. 926,004. Wilhelm Keller, Reutlingen, Germany.

FABRICS to Render Them Adhesive. Treating. 925,894. Frederick J. Gleason, Walpole, Mass.

FABRIC ROLL Edge Protector. 923,362. George W. Loughman, South Bend, Ind.

KNIT FABRIC Having Elastic Selvages. 924,385. Herbert C. Shaw, Chicago, Ill.

KNITTING MACHINE. Rib. 925,393. Robert W. Scott, Leeds Point, N. J.

KNITTING MACHINE Web Holder. Rib. 925,036. Robert W. Scott, Leeds Point, N. J.

LOOM. 922,718. William C. Perry, Charlestown, R. I.

LOOM. 924,142. William R. Burrons, Newark, N. J.

LOOM. 924,339. Walter J. Garlick, Paterson, N. J.

LOOM. 923,723. Harry W. Smith, North Grafton, Mass.

LOOM. 924,886. William R. Burrows, Newark, N. J.

LOOM. Automatic-Filling-Replenishing. 926,015. Jonas Northrop, Hopedale, Mass.

LOOM Selecting Device. Haircloth. 923,144. George S. Cox, Fitzwatertown, Pa.

LOOM-SIDE Protector. 924,451.

LOOM SHUTTLE. Automatically-Threading. 926,016. Jonas Northrop, Hopedale, Mass.

LOOM STARTING and Stopping Mechanism. 926,021. Alonzo E. Rhoades, Hopedale, Mass.

LOOM Stop Mechanism. 923,393. Jos. B. Whitney, Brooklyn, N. Y.

LOOM SHUTTLE. 926,017. Jonas Northrop, Hopedale, Mass.

LOOM Weft Replenishing. 923,460. Melvin L. Stone, Lewiston, Me.

LOOM Weft Replenishing Mechanism. 924,996. Carl Klein, Gottenborg, Sweden.

LOOMS. Lay for. 923,223. William Wattie, Worcester, Mass.

LOOM Thread Parting Mechanism. 922,511. Alonzo E. Rhoades, Hopedale, Mass.

LOOMS. Weft-Cutting Mechanism for Weft Replenishing. 825,891. Johannes Gabler, Muelhusen, Germany.

LOOMS. Weft Feeler for Automatic Weft Replenishing. 922,539. William R. Stitt, Belfast, Ireland.

LOOMS. Weft-Supplying Mechanism for Automatic Weft Replenishing. 923,475. Edward S. Stimpson, Hopedale, Mass.

THREAD-SINGEING Device. 923,425. Gustave Gin, Paris, France.

THREADS or Artificial Silk. Apparatus for Producing and Treating Vicose. 923,777. Gustave Delubac, La Begude, France.

WOVEN FABRIC. 924,788. Victor H. Jennings, Worcester, Mass.

Recent Textile Trade Marks Registered.

"Beco." Broad silks and woolen dress goods known as piece goods. Bachmann, Emmerich Co., New York.

"Doster." Men's silk, cotton and woolen shirts. Daniel Osterweis & Co., New York.

"Balboa." Hosiery and knit underwear. Bauer Bros. & Co., San Francisco, Cal.

"M. W. S." Men's outer work shirts. Upham Bros. & Co., Philadelphia, Pa.

"Dairy Main." Bleached cotton goods in the piece. Deering, Milliken & Co., New York.

"Six O'clock." Bleached cotton goods in the piece. Deering, Milliken & Co., New York.

"Kanvas Bak." Cotton duck. Curran & Barry, New York.

"S. O. P." One-piece pajamas. Rudolph Bardenheuer, New York.

"Hub." Thread and yarn. John C. Meyer, Lowell, Mass.

"Eclipse." Cotton cheviots. C. J. Milne & Sons, Philadelphia, Pa.

"Profile." Overalls, duck coats, etc. Carter & Churchill Co., Lebanon, N. H.

"Marmo." Corset waists. The H. and W. Co., Newark, N. J.

"Billy Possum." Hosiery. Barrington S. Sharp, Atlanta, Ga.

"Edco." Knitting machines and parts thereof. Edouard Dubied & Co., Convet, Switzerland.

"Poplynaire." Silk, linen and cotton piece goods. Burch, Bailey & Co., New York.

"Coro-net." Hair nets. Poirier & Lindeman, New York.

"Snowflake." Dress shields. The Kora Co., New York.

"The American Beuty." Embroideries. Carson, Pirie, Scott & Co., Chicago, Ill.

"The Great Western." Embroideries. Carson, Pirie, Scott & Co., Chicago, Ill.

"Lone Star." Cotton goods in the piece. Bonham Cotton Mills, Bonham, Tex.

"Cactus." Cotton goods in the piece. Bonham Cotton Mills, Bonham, Tex.

"Dew Drop." Chiffon. Wertheimer Bros., New York.

"The Yankee." Ladies' and misses' coats, capes, etc. Emanuel Sperling, Cleveland, O.

"Quaker Maid." Ribbons. Young, Smyth, Field Co., Philadelphia, Pa.

"Paragon." Handkerchiefs. Cochrame Mfg. Co., Dedham, Mass.

C. E. RILEY COMPANY

65 Franklin Street, .. BOSTON, MASS.

COTTON AND COTTON GOODS YARNS

DIRECT IMPORTERS OF EGYPTIAN COTTON

COTTON WOOLEN WORSTED MACHINERY

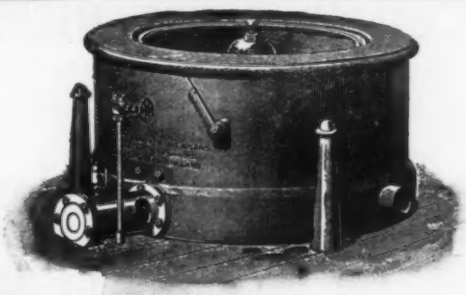
Thomas Broadbent & Sons,

Huddersfield, Eng.

PATENT DIRECT STEAM DRIVEN

HYDRO-EXTRACTORS

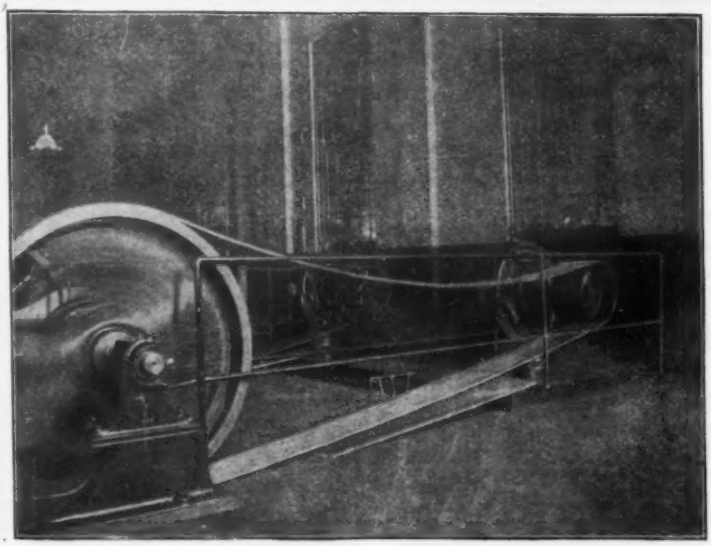
OVER 3500 IN USE. ALSO ELECTRICALLY DRIVEN



SUSPENDED ON LINKS. REQUIRING NO EXPENSIVE FOUNDATIONS

C. E. RILEY COMPANY, Sole Agents 65 Franklin St., Boston, Mass.

Machines Kept in Stock in Boston



Static Electricity In Belts

This belt is an example of the way Cling-Surface will stop generation of static.

It was full of static, running tight and slipping more or less.

Cling-Surface stopped the slipping so belt could run slack and gave the soft, velvety face which Cling-Surface produces.

Static stopped at once and you note the chains, formerly used for grounding, pushed aside.

Cling-Surface will prevent static in every belt or rope you run, no matter what weather conditions are and we guarantee it. Write us or try at our risk.

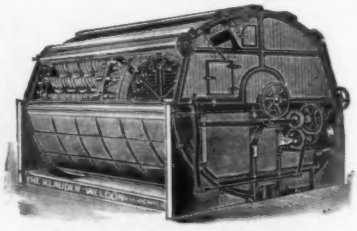
CLING-SURFACE COMPANY 1051 Niagara Street BUFFALO N Y

NEW YORK BOSTON ATLANTA MEMPHIS, Etc.

RAW WOOL AND COTTON MACHINE.

MACHINES sold on 2 MONTHS' TRIAL

YOU TAKE NO RISK

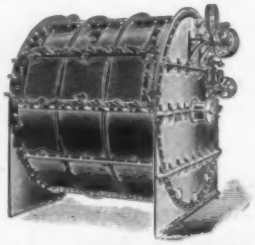


SKEIN AND SLUBBING MACHINE.

THE KLAUDER-WELDON DYEING MACHINE COMPANY

HUDDERSFIELD, ENGLAND. *AMSTERDAM, N. Y.*

Machines for Dyeing, Bleaching and Scouring Woolen, Worsted, Cotton and Silk Skeins—Slubbing—Raw Cotton and Wool, Waste, Rags, Shoddy, Hosiery, Underwear, Hats, Caps, Knit Cloth, Tapes, etc.

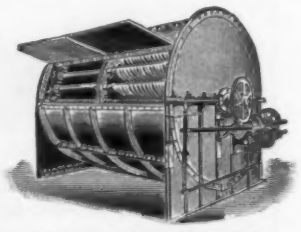


SULPHUR HOSIERY MACHINE.

Special Machines for Sulphur Colors

WILL EARN THEIR COST IN LABOR ALONE IN FROM 6 TO 12 MONTHS ACCORDING TO CAPACITY

Southern Agent, O. A. ROBBINS, Charlotte, N. C.



SULPHUR SKEIN MACHINE.

Buyers' Index

The addresses of builders of mill machinery and dealers in mill supplies, whose names appear in the following classified index, may be found upon referring to their advertisements. The Alphabetical Index to advertisers follows this classified list. Buyers who are unable to find in the classification here given such machinery or supplies as they desire, are invited to communicate with the publishers, who can, in all probability, refer them to proper sources. Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

Accountants.
American Cost Accountant Co.

Air Moistening System.
American Moistening Co.
Bell Pure Air & Cooling Co.
Carrier Air Conditioning Co. of America.
Cramer, Stuart W.
Fries, John W.
Parks, G. M., Co.

Architects and Mill Engineers.
Dean, F. W.
Ferguson, John W.
Cramer, Stuart W.

Asphalt Tanks.
Scaife, W. B., & Sons.

Automatic Feeds for Cotton and Wool.
Bates & Robinson Machine Co.
Kitson Machine Co.
Leigh, Evan A.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Schofield, Wm., Co.
Woonsocket Machine & Press Co.

Bale Ties.
Acme Steel Goods Co.
Reliable Tie Co.

Baling Presses.
Boomer & Boschert Press Co.
Philadelphia Drying Mchy. Co.
Minnich Machine Works.

Bandings.
—See under Yarns.

Baskets.
Lane, W. T., & Bro.

Beams (Steel).
Mossberg, Frank, Co.

Bearing Metals.
Dodge Mfg. Co.

Belting.
Burnham, E. E., Co.
Gandy Belting Co.
Graton & Knight Belting Co.
Rhoades, J. E., & Sons.
Schieren Co., Chas. A.
Shultz Belting Co.
Turner Mfg. Co., J. S.
—See also Mill Supplies.

Belt Dressing.
Cling Surface Mfg. Co.
Dixon, Jos., Crucible Co.
Schieren, Chas. A., Co.
Shultz Belting Co.
Stephenson Mfg. Co.

Belt Lacing Machines.
Birdsboro Steel Foundry & Machine Co.

Bindings.
—See Tapes and Braids.

Bleaching Kiers.
Arlington Mch. Wks. (Arthur Birch, prop.)
Buhlmann, A. W.
Philadelphia Drying Machinery Co.
Textile Finishing Machinery Co.

Bleaching Materials.
Bosson & Lane.
Carbondale Calcium Co.
Danker & Marston.
Roessler & Hasslacher Chemical Co.
Seydel Mfg. Co., The.

Blowers and Blower Systems.
American Blower Co.
Cameron Machine Co.
Dean Bros. Steam Pump Works.
Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.
Schnitzler, Chas. H.
Sirocco Engineering Co.

Bobbins, Spools, Shuttles, Etc.
American Supply Co.
American Textile Specialty Mchy. Co.
Buhlmann, A. W.
Leigh, Evan A.
Lestershire Spool & Bobbin Co.
Mossberg, Frank, Co.
Tebbets, E. L., & Co.
Wilson & Co.

Bobbin Winders.
Lever, Oswald Co.
Universal Winding Co.

Boilers.
—See Steam Boilers.

Boxes, Cloth Boards, Etc.
Pearson, J. T.

Box Strapping.
Acme Steel Goods Co.

Braiding Machinery.
Mason Mfg. Co.
New England Butt Co.
Textile Machine Works.

Braids.
—See Tapes, Braids and Edgings.

Brass Hinges.
Root, C. J., Co.

Bridges.
Scaife, W. B., & Sons.

Brushers.
—See Napping Machines.

Brushes.
Felton, S. A., & Son Co.
Mason Brush Works.

Burr Pickers.
Curtis & Marble Machine Co.
Sargent's, C. G., Sons.
Smith & Furbush Machine Co.

Calico Printers' Machinery and Supplies.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch Bros., Somerville Machine Wks.
Buhlmann, A. W.
Butterworth, H. W., & Sons Co.
Taunton-New Bedford Copper Co.
Textile Finishing Mchy. Co.
—See also Dyeing, Bleaching, Machinery, etc.

Canvas Baskets.
Lane, W. T., & Bro.

Caps.
Calder Machine Works.

Carbonizing Machinery.
Birch Bros., Somerville Machine Wks.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sargent's, C. G., Sons.
Schuchardt & Schutte.
Tolhurst Machine Works.

Card Clothing.
Ashworth Bros.
Bates & Robinson Machine Co.
Buhlmann, A. W.
Crabb, Wm., & Co.
Howard Bros. Mfg. Co.
Leigh, Evan A.
Richards, Atkinson & Haserick.
Riley, C. E., Company.

Carded Cotton.
Blaisdell, S., Jr., Company.

Card Feeds.
—See Automatic Feeds.

Card Grinding Machinery.
Entwistle, T. C., Co.
Leigh, Evan A.
Riley, C. E., Company.
Smith & Furbush Machine Co.
Richards, Atkinson & Haserick.

Carders' Tools.
Brown, Wm. H., Co.

Carpet Machinery.
Altemus, Jacob K.
Curtis & Marble Machine Co.
Philadelphia Textile Machinery Co.
Smith & Furbush Machine Co.

Castings.
Farrel Foundry and Machine Co.
Schofield, Wm., Co.

Cell Driers.
Cell Drier Machine Co.

Cement Pans.
Scaife, W. B., & Sons.

Chemicals.
Harding, Fancourt & Scull.
Roessler & Hasslacher Chemical Co.

Chemists.
Little, Inc., Arthur D.
McKenna, Dr. Chas. F.

Cling Surface.
Cling Surface Mfg. Co.

Clocks.
Nanz, T., Clock Co.
Pettes & Randall Co.

Cloth Boards.
Chaffee Bros.
Pearson, J. T.
Richardson Brothers.

Cloth Cutting Machinery.
Adams, A. L.
Cameron Machine Co.

Cloth Expanders.
American Finishing Machinery Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Leyland, Thomas, & Co.
Textile Finishing Machinery Co.

Cloth Testers.
Scott, Henry L., & Co.

Clutches.
American Tool & Machine Co.
Dodge Mfg. Co.
Hunter, James, Machine Co.
Mossberg Wrench Co.

Coal.
Darrow Mann Co.

Coal Analysis.
Little, Inc., A. D.

Combs (Wool and Cotton).
Hood, R. H., Company.
Jefferon, Edward, & Brother.
Leigh, Evan A.
Philadelphia Textile Machinery Co.
Richards, Atkinson & Haserick.
Riley, C. E., Company.
Turner Mfg. Co., J. S.

Condensers.
Dean Bros. Steam Pump Works.

Conditioning of Textile Fabrics.
U. S. Silk Conditioning Works.

Conveying Systems.
Dodge Mfg. Co.
Schnitzler, C. H.
Sturtevant, B. F., Co.

Cop Machinery.
Eppler, John, Mach. Works.

Cop Spindles.
American Textile Specialty Mchy. Co.
Hall, F. A., & P.

Cop Tubes.
American Textile Specialty Mchy. Co.
Buhlmann, A. W.
Hall, F. A., & P.
—See Paper Tubes.

Copper Print Rollers.
Taunton-New Bedford Copper Co.

Coppersmiths.
Badger, E. B., & Sons Co.

Copper Work for Dyers.
Badger, E. B., & Sons Co.
Butterworth, H. W., & Sons Co.
Harrington & King Perforating Co.
Textile Finishing Machinery Co.

Corrugated Iron and Steel.
Scaife, W. B., & Sons.

Alphabetical Advertising Index, with page numbers, follows this list.

Cotton.
Blaisdell, S., Jr., Co.
Charles, W. B.
Riley, C. E., Company.
Schwartz, L. H. A., & Co.

Cotton Machinery.
Altemus, Jacob K.
American Textile Specialty Mchy. Co.
Ashworth Bros.
Bates & Robinson Machine Co.
Buhlmann, A. W.
Butterworth, H. W., & Sons Co.
Cramer, Stuart W.
Crompton & Knowles Loom Works.
Curtis & Marble Machine Co.
Dixon Lubricating Saddle Co.
Draper Company.
Easton-Burnham Co.
Elliott & Hall.
Richards, Atkinson & Haserick.
Entwistle, T. C., Co.
Firth, William, Co.
Haskell-Dawes Machine Co.
Howard & Bullough American Mach. Co.
Kilburn, Lincoln & Co.
Kip-Armstrong Co.
Kitson Machine Co.
Klauder-Weldon Dyeing Machine Co.
Leigh, Evan A.
Lowell Machine Shop.
Mason Machine Works.
McKerrow, H. G., Co., Ltd.
Metallic Drawing Roll Co., The.
Palmer, I. E., Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Providence Machine Co.
Richards, Atkinson & Haserick.
Riley, C. E., Company.
Saco & Pettee Machine Shops.
Schofield, Geo. L.
Schwartz, L. H. A., & Co.
Smith & Furbush Machine Co.
Stafford Co., The.
Textile Finishing Machinery Co.
Textile Machinery Co.
Whitin Machine Works.
Wildman Mfg. Co.
Woonsocket Machine & Press Co.

Cotton Openers and Lappers.
Howard & Bullough American Mach. Co.
Kitson Machine Co.
Leigh, Evan A.
Richards, Atkinson & Haserick.
Riley, C. E., Company.

Cotton Softeners.
Bosson & Lane.
Burckhardt & Co.
Danker & Marston.
Harding, Fancourt & Scull.
Seydel Mfg. Co., The.

Cotton Waste.
Blaisdell, S., Jr., Co.
Charles, W. B.
Schofield, Edwin F.

Counting Machines.
Root, C. J., & Co.
Schuhardt & Schutte.

Crayons.
Dixon, Jos., Crucible Co.
Lowell Crayon Co.

Creosote.
Carbolineum Wood Preserving Co.

Cutting Machines.
Adams, A. L.
Cameron Machine Co.

Cylinder Oil (Superheated Steam).
Power Specialty Co.

Disinfectants.
Seydel Mfg. Co., The.

Dobbies.
Crompton & Knowles Loom Works.
Kilburn, Lincoln & Co.
Stafford Co., The.

Dobby Chain.
Nuttall, George.

Doupe Cutters.
Cameron Machine Co.

Draughtsmen.
Cameron Machine Co.

Drawing Rolls.
Jefferson, Edward, & Brother.
Hood, R. H., Company.
Metallic Drawing Roll Co., The.

Drying Machinery.
American Blower Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch, Arthur, Arlington Mch. Wks.
Birch Bros., Somerville Machine Wks.
Buhlmann, A. W.
Butterworth, H. W., & Sons Co.
Cell Drier Machine Co.
Hunter, Jas., Machine Co.
Jefferson, Edward, & Brother.
Kenyon, D. R., & Son.
Philadelphia Drying Machinery Co.
Sargent's, C. G., Sons.
Schwartz, L. H. A., & Co.
Sturtevant, B. F., Co.
Textile Finishing Machinery Co.
Tolhurst Machine Works.

Drying Boards.
Bull, William C.
Pearson, J. T.
Philadelphia Drying Mchy. Co.

Dusters.
——See Wool and Waste Dusters.

Dust Collectors.
American Blower Co.
Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.

Dyers, Bleachers and Finishers.
Brophy's, T., Sons.
Davidson, J. F.
Firth & Foster Co.
Globe Dye Works Co.
Home Bleach & Dye Works.
Hopkinson Dyeing & Textile Works.
Lorimer's, The Wm. H., & Sons Co.
Pawtucket Dyeing & Bleaching Co.
Peerless Co.
Solway Dyeing & Textile Co.
Utica Willowvale Bleaching Co.
Western Thread & Dye Works.

Dyeing, Drying, Bleaching and Finishing Machinery.
American Blower Co.
American Laundry Mchy. Mfg. Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch, Arthur, Arlington Mch. Wks.
Birch Bros., Somerville Machine Wks.
Buhlmann, A. W.
Butterworth, H. W., & Sons Co.
Cell Drier Machine Co.
Curtis & Marble Machine Co.
Entwistle, T. C., Co.
Gessner, David.
Heathcote, John, & Son.
Hopkins Machine Works.
Hunter, James, Machine Co.
Kenyon, D. R., & Son.
Klauder-Weldon Dyeing Machine Co.
Klipstein, A., & Co.
Leigh, Evan A.
Leyland, Thos., & Co.
National Laundry Machinery Co.
Parks & Woolson Machine Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Rodney Hunt Mach. Co.
Schwartz, L. H. A., & Co.
Schuhardt & Schutte.
Smith, Drum & Co.
Sturtevant, B. F., Co. (Drying).
Taylor & Fenn Co.
Textile Finishing Machinery Co.
Tolhurst Machine Works.

Dye House Cans.
Hill, James, Mfg. Co.

Dye House Trucks.
Bailey, Frank.

Dye Sticks.
Bailey, Frank.
Haedrich, E. M.
Klauder-Weldon Dyeing Machine Co.

Dye Tubs.
——See Tanks, Tubs and Vats.

Dyestuffs and Chemicals.
American Dyewood Co.
Arabol Manufacturing Co.
Atteaux, F. E., & Co.
Badische Co.
Berlin Aniline Works.
Bischoff & Co.
Bosson & Lane.
Carbondale Calcium Co.
Cassella Color Co.
Danker & Marston.
Farbenfabriken of Elberfeld Co.
Kalle & Co.
Ford, J. B., Co.
Geisenheimer & Co.
Jamaica Dyewood & Chemical Co.
Johnson, Chas. A., & Co.
Klipstein, A., & Co.
Leyland, Thos., & Co.
Metz, H. A., & Co.
Roessler & Hasslacher Chemical Co.
Sykes, Walter F., & Co.
Thayer, Ed. M., & Co.
Young, J. S., & Co., Ltd.

Dynamos.
——See Electric Lighting.

Edgings.
——See Tapes, Braids and Edgings.

Electrical Construction.
Crocker-Wheeler Co.
General Electric Co.
Sturtevant, B. F., Company.
Watson-Flagg Engineering Co.
Westinghouse Electric & Mfg. Co.

Electrical Heating Devices.
Crocker-Wheeler Co.
General Electric Co.

Electric Driven Pumps.
Dean Bros. Steam Pump Works.
General Electric Co.

Electric Fans.
American Blower Co.
Crocker-Wheeler Co.
General Electric Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sturtevant, B. F., Co.
Watson-Flagg Engineering Co.
Westinghouse Electric & Mfg. Co.

Electric Hoists.
Crocker-Wheeler Co.
General Electric Co.

Electric Lighting.
American Blower Co.
Crocker-Wheeler Co.
General Electric Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electric Motors.
——See Motors (Electric).

Electrolyzer.
National Laundry Machinery Co.

Elevators.
Economy Engineering Co.
N. Y. Revolving Portable Elevator Co.
Salem Elevator Works.

Embossing Machines.
Cameron Machine Co.

Employees' Time Recorders.
Pettes & Randall Co.

Engines.
——See Steam Engines.

Engine Repairs.
Fishkill Landing Machine Co.

Exhaust Heads.
Sturtevant, B. F., Co.
Power Specialty Co.

Fans—Exhaust and Ventilating.
——See Ventilating Apparatus.

Feed Water Heaters.
Scaife, W. B., & Sons.

Feed Water Pumps.
Dean Bros. Steam Pump Works.
Goulds Mfg. Co.

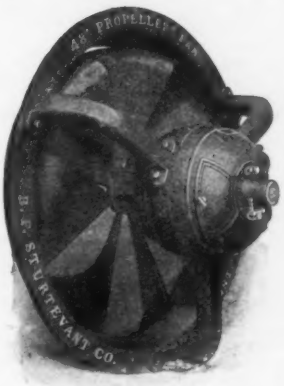
Feed Water Purifiers.
Dodge Mfg. Co.
Scaife, W. B., & Sons.

Alphabetical Advertising Index, with page numbers, follows this list.

Sturtevant Electric Ventilating Fans

Propeller Fans

For low pressures. Built in a full line of sizes from 18 inches to 120 inches with capacities from 2,000 to 175,000 cubic feet per minute. Motors are dust proof and non-heatable. Fans up to 48 inches for 110 and 220 volts are carried in stock at works and branch ware-rooms.



Steel Plate Cased Fans

For higher pressures. Built to order to meet any requirements. Fans are of standard make; Motors are specially wound to give desired speed. Both fan and motor are Sturtevant products.

Send for Bulletin No. 146.

B. F. STURTEVANT CO., BOSTON, MASS.

General Office and Works, Hyde Park, Mass.

NEW YORK PHILADELPHIA CHICAGO CINCINNATI LONDON

Designers and Builders of Heating, Ventilating, Drying and Mechanical Draft Apparatus; Fan Blowers and Exhausters, Rotary Blowers and Exhausters; Steam Engines, Electric Motors and Steam Turbines; Pneumatic Separators, Fuel Economizers, Forges, Exhaust Heads, Steam Traps, etc. 625

Feeds.
—See Automatic Feeds.

Feed Water Regulators.
Berry Engineering Co.

Felt Hardeners.
Farrel Foundry and Machine Co.

Felting Machinery.
Farrel Foundry and Machine Co.

Fender Boards.
Case Bros.

Filters.
Hungerford & Terry.
Norwood Engineering Co.
Scaife, W. B., & Sons.

Finishing Compounds.
—See Sizings.

Finishing Machinery.
—See Dyeing, Drying, Bleaching and Finishing.

Fire Brick.
Borgner, Cyrus, Co.

Fire Extinguishers.
Badger, E. B., & Sons Co.

Fire Hose.
Eureka Fire Hose Co.

Fire Hydrants.
Norwood Engineering Co.

Fire Insurance.
Home Insurance Co.

Fire Proof Doors and Windows.
Badger, E. B., & Sons Co.

Flax, Tow, Hemp and Jute Machinery.
Fairbairn-Lawson-Combes-Barbour, Ltd.
Haskell-Dawes Machine Co.

Fluted Rolls.
Bates & Robinson Machine Co.
Hood, R. H., Company.
Leigh, Evan A.
Jefferson, Edward & Brother.
Riley, C. E., Company.
Thurston, A. G., & Son.

Flyers.
Bodden, Wm., & Son, Ltd.
Calder Machine Works.
Hall, F. A. & P.
Hopkins Machine Works.
Jefferson, Edward, & Brother.
Leigh, Evan A.
Textile Machinery Co.

Fly Wheels.
Dodge Mfg. Co.

Forges.
Sturtevant, B. F., Co.

Friction Clutches.
—See Clutches.

Friction Cones.
Evans Friction Cone Co.

Fuel.
Darrow Mann Co.

Fuel Economizers.
Sturtevant, B. F., Co.

Fulling Mills for Woolen Goods.
Buhlmann, A. W.
Hopkins Machine Works.
Hunter, Jas., Machine Co.
Kenyon, D. R., & Son.
Rodney Hunt Mach. Co.

Furnaces (Automatic Smokeless).
Murphy Iron Works.

Garnetts.
Bates & Robinson Machine Co.
Hunter, James, Machine Co.
Leigh, Evan A.
Smith & Furbush Machine Co.

Gas Blowers and Exhausters.
American Blower Co.
Sturtevant, B. F. Co.

Gaskets (Superheated Steam).
Power Specialty Co.

Gauges.
Crosby Steam Gage & Valve Co.
Walworth Manufacturing Co.

Gears.
Dodge Mfg. Co.
Farrel Foundry and Machine Co.
New Process Raw Hide Co.

Gear Cutting.
Farrel Foundry and Machine Co.

Gear Cutting Machine.
Whiton, The D. E., Co.

Generating Sets.
American Blower Co.
Buffalo Forge Co.
General Electric Co.
Sturtevant, B. F., Co.

Geyser Water Heater.
Sargent's Sons, C. G., Corp.

Greases.
N. Y. & N. J. Lubricant Co.

Harness Twine.
Moore, C., & Co.

Harness and Frames.
Steel Heddle Mfg. Co.
Garland Mfg. Co.

Heating.
—See Ventilating Apparatus.

Heddles.
Howard Bros. Mfg. Co.
Richards, Atkinson & Haserick.
Steel Heddle Mfg. Co.

Hoisting Apparatus.
Economy Engineering Co.

Hosiery Boards.
Pearson, J. T.
Philadelphia Drying Machinery Co.

Hosiery Labels.
Kaumagraph Company.

Humidifying Apparatus.
American Moistening Co.
Bell Pure Air & Cooling Co.
Carrier Air Conditioning Co. of America.
Cramer, Stuart W.
Fries, John W.
Parks, G. M., Co.

Hydraulic Rams.
Power Specialty Co.
Walworth Mfg. Co.

Hydro Extractors.
American Laundry Mchy. Mfg. Co.
American Tool & Machine Co.
Broadbent, Thomas, & Sons.
Dienelt & Eisenhardt, Inc.
Riley, C. E., Company.
Richards, Atkinson & Haserick.
Schaum & Uhlinger.
Textile Finishing Machinery Co.
Tolhurst Machine Works.

Ice Machines.
Remington Machine Co.

Insulating and Braiding Silks.
Sauquoit Silk Mfg. Co.

Insurance (Casualty, Fire and for Loss of Profits).
Home Insurance Co.

Ironing Machines for Knit Goods.
American Laundry Machinery Mfg. Co.

Jacquards.
Halton's, Thomas, Sons.

Jacquard Cards.
Case Bros., Inc.

Knit Goods, Edgings, Trimmings, Etc.
Chapin, Geo. W.
Charles, W. B.
Cheney Bros.
Friedberger-Aaron Mfg. Co.
Krout & Fite Mfg. Co.
Weimar Bros.

Knit Goods, Finishing Machines Crochet, Etc.
American Laundry Machinery Mfg. Co
Hoffman, U. S.
Merrow Machine Co., The.
Nye & Tredick Co.
Scott & Williams.
Union Special Machine Co.

Knitting Machine Cylinders.
Paxton & O'Neill.
Stafford & Holt.

Knitting Machinery.
Ainsley Knitting Machine Co.
Boss Knitting Machine Co.
Brinton, H., & Co.
Claes & Flentje.
Climax Machine Co.
Cooper, Chas.
Crane Mfg. Co.
Dubied, Edouard, & Co.
Eppiers, John, Mach. Works.
Excelsior Knitting Machine Mfg. Co.
General Machine Works.
Gormly, Robt. W., & Co.
Grosser Knitting Machine Co.
Hemphill Mfg. Co.
Jenckes, E., Mfg. Co.
Lamb Knitting Mach. Mfg. Co.
Leckie, Jas., & Son.
Leighton Machine Co.
Mayo, Geo. D., Knitting Machine Co.
Mayo Knitting Machine & Needle Co.
National Automatic Knitter Co.
Nye & Tredick Co.
Paxton & O'Neill.
Scott & Williams.
Stafford & Holt.
Standard Machine Co.
Taylor, James.
Tompkins Bros. Co.
Walther, Otto.
Wildman Mfg. Co.

Knitting Needles and Supplies.
Breedon's, Wm., Sons.
Brinton, H., & Co.
Continental Latch Needle Company.
Cooper, Chas.
Corey, Wm., Co.
Crane Mfg. Co.
Dodge Needle Co.
Excelsior Needle Co.
Grosser Knitting Machine Co.
Ives, L. T., Co.
Lamb Knitting Machine Mfg. Co.
Keystone Latch Needle Co.
Mayo Knitting Machine & Needle Co.
Wardwell Needle Co.

Labels.
Kimball, A., Co.

Lamps, Electric.
Cooper Hewitt Electric Co.
General Electric Co.
Westinghouse Electric & Mfg. Co.

Lockers.
Williamson, W. S.

Loom Pickers.
Garland Mfg. Co.

Looms.
Crompton & Knowles Loom Works.
Draper Company.
Kilburn, Lincoln & Co.
Leigh, Evan A.
Lowell Machine Shop.
Mason Machine Works.
Richards, Atkinson & Haserick.
Stafford Co., The.
Whitin Machine Works.

Loopers.
Beattie Manufacturing Co.
Hepworth, John W., & Co.
Leighton Machine Co.

Lubricants.
Borne, Scrymser Co.
Dixon, Jos., Crucible Co.
N. Y. & N. J. Lubricant Co.

Lubricators.
Detroit Lubricator Co.
The United States Mica Co.
Schoiler Bros.
Walworth Mfg. Co.

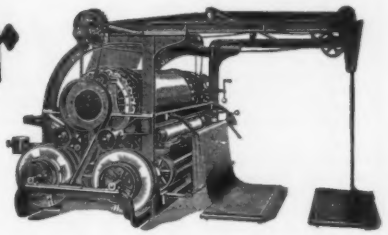
Lumpers.
Gerry, George, & Son.
Schofield, Wm., Co.

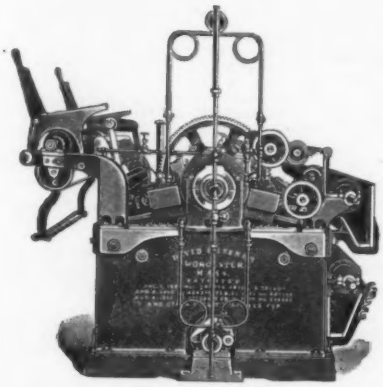
Machine Designers.
Adams, A. L.
Cameron Machine Co.

Alphabetical Advertising Index, with page numbers, follows this list.

David Gessner

Worcester, Mass.

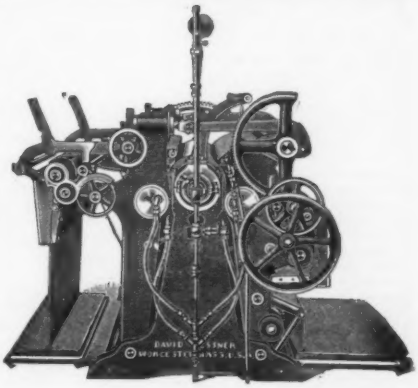




Latest Improved Cloth Finishing Machinery

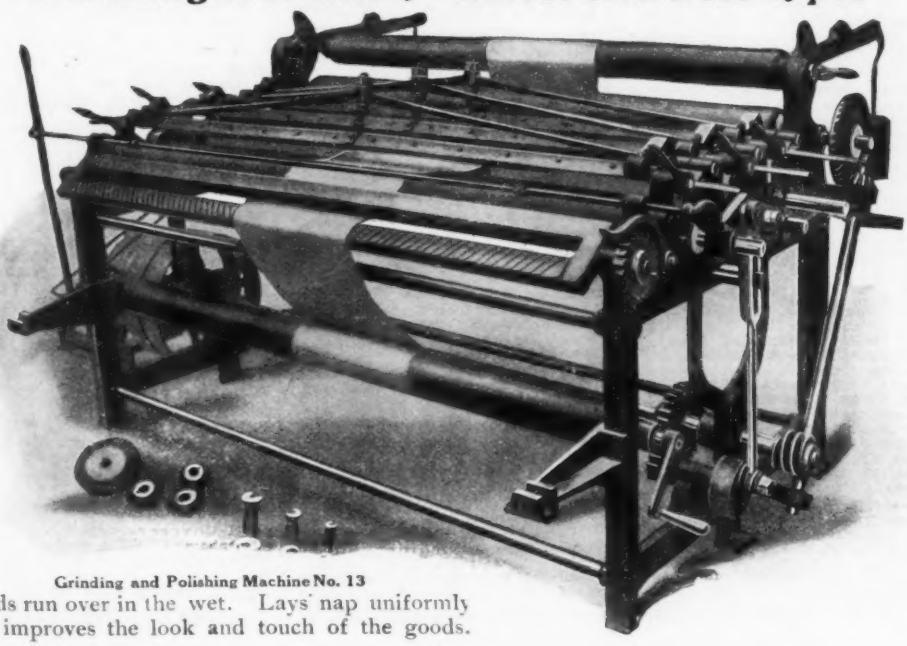
—

Napping Machines and Presses a Specialty



Schuchardt & Schutte, 90 West St., New York

Finishing Machinery—Latest and Best Types



Grinding and Polishing Machine No. 13

Goods run over in the wet. Lays nap uniformly and improves the look and touch of the goods.

Machinery Dealers.
Jefferson, Ed., & Bro.
Schofield, Geo. L.
Taylor, James.

Machinists.
Adams, A. L.
Calder Machine Works.
Cameron Machine Co.

Machinists' Tools.
Whiton, The D. E., Co.

Mails.
Walder, J.

Marking Pots.
Bradley, A. J.

Marking Tickets.
Kimball, A., Co.

Measuring and Folding Machines.
Curtis & Marble Machine Co.
Elliott & Hall.

Mechanical Draft.
American Blower Co.
Sirocco Engineering Co.
Sturtevant, B. F., Co.

Mechanical Draughtsmen.
Sturtevant, B. F., Co.
Cameron Machine Co.

Mechanical Engineers.
American Blower Co.
Dodge Mfg. Co.
Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.

Mechanical Stokers.
American Ship Windlass Co.
Murphy Iron Works.

Mercerizers.
Globe Dye Works Co.
Home Bleach & Dye Works.
Lorimer, Wm. H., Sons Co.

Mercerizing Machinery.
Buhlmann, A. W.
Butterworth, H. W., & Sons.
Klauder-Weldon Dyeing Machine Co.
Schwartz, L. H. A., & Co.
Smith, Drum & Co.
Textile Finishing Machinery Co.

Metallic Fire-proof Window Frames and Sashes.
Badger, E. B., & Sons Co.

Metallic Packing.
Power Specialty Co.

Mill Architects.
——See Architects and Mill Engineers.

Mill Builders and Engineers.
Ferguson, John W.

Mill Supplies.
American Supply Co.
Bamford & Smith.
Buckley's, Benjamin, Sons.
Burnham, E. E., & Co.
Crabb, Wm., & Co.
Crosby Steam Gage and Valve Co.
Easton-Burnham Co.
Eureka Fire Hose Co.
Garland Mfg. Co.
Jefferson, Ed., & Bro.
Lane, W. T., & Bro.
Leigh, Evan A.
N. Y. & N. J. Lubricant Co.
Philadelphia Drying Machinery Co.
Pratt, R. C.
Riley, C. E., Company.
Richards, Atkinson & Haserick.
Richardson Bros.
Schierin, Chas. A., Co.
Shaw, Victor, Ring Traveler Co.
Stephenson Mfg. Co.
Sweet & Doyle.
Thurston, A. G., & Son.
Turner Mfg. Co., J. S.
Vandegrift, Elias T.
Walworth Manufacturing Co.

Motors (Electric).
Crocker-Wheeler Co.
Diehl Manufacturing Co.
General Electric Co.
Sturtevant, B. F., Co.
Watson-Flagg Engineering Co.
Westinghouse Electric & Mfg. Co.

Napping Machinery.
Birch Bros., Somerville Machine Wks.
Buhlmann, A. W.
Cocker Machinery Co.
Curtis & Marble Machine Co.
Gessner, David.
Leigh, Evan A.
Parks & Woolson Machine Co.

Noils (Silk).
Ryle, Wm., & Co.

Non-Fluid Oils.
N. Y. & N. J. Lubricant Co.

Oilless Bearings.
Arguto Oilless Bearing Co.

Oil Cups.
Walworth Manufacturing Co.

Oils.
Borne, Scrymser Co.
Burckhardt & Co.
Harding, Fancourt & Scull.
New York & New Jersey Lubricant Co.
Scholler Bros.
Stephenson Mfg. Co.

Oil Stencil and Press Board Paper.
Bradley, A. J.

Overseaming Machines.
Merrow Machine Co.
Singer Sewing Machine Co.

Packings (Metallic).
Power Specialty Co.

Paints.
Brown, Chas. H., Paint Co.
U. S. Gutta Percha Paint Co.

Paints (Wood Preserving).
Carbolineum Co.

Pantagraphs for Mill Engraving.
Johnson, C. A., & Co.

Paper.
Merwin Paper Co.
Richardson Bros.

Paper Boards.
Merwin Paper Co.

Paper and Cloth Slitters.
Cameron Machine Co.

Patent Solicitors.
Crosby & Gregory.
Foulds & Galland.
Howson & Howson.

Perforated Metals.
Harrington & King Perforating Co.
Hopkins Machine Works.

Peroxide of Sodium.
Roessler & Hasslacher Chemical Co.

Pipes and Fittings.
Scaife, W. B., & Sons.
Walworth Manufacturing Co.

Pneumatic Conveying.
——See Ventilating.

Portable Elevators.
Economy Engineering Co.
N. Y. Revolving Portable Elevator Co.

Power Transmission Machinery.
Almond, T. W., Mfg. Co.
American Pulley Co.
Cell Drier Machine Co.
Cresson, Geo. V., Company.
Dodge Mfg. Co.
Evans, G. Frank.
Farrel Foundry and Machine Co.
Hunter, Jas., Machine Co.
Kilburn, Lincoln & Co.
Oneida Steel Pulley Co.
Philadelphia Drying Machinery Co.
Phillips Pressed Steel Pulley Works.
Reeves Pulley Co.
Saginaw Manufacturing Co.
Schofield, Wm., Co.
Sellers, William, & Co.
Textile Finishing Machinery Co.
Tolhurst Machine Works.

Preparatory Machinery (Cotton).
Howard & Bullough Am. Machine Co
Kitson Machine Co.
Leigh, Evan A.
Riley, C. E., Company.
Saco & Pettee Machine Shops.

Preservatives.
Carbolineum Wood Preserving Co.

Presses.
Boomer & Boschert Press Co.
Buhlmann, A. W.
Butterworth, H. W., & Sons Co.
Curtis & Marble Machine Co.
Gessner, David.
Hart, Charles.
Hoffman, U. S., Co.
Hydraulic Press Mfg. Co.
Minnich Machine Works.
Phila. Drying Machinery Co.
Spence & Rideout.
Textile Finishing Machinery Co.
Woonsocket Machine & Press Co.

Press Boards.
Case Bros., Inc.

Press Papers.
Merwin Paper Co.
Philadelphia Drying Mchy. Co.
Richardson Brothers (Importers and Dealers).

Pressure Regulators.
Crosby Steam Gage & Valve Co.
Walworth Mfg. Co.

Producer Gas Power Plants.
Cameron Machine Co.

Pulleys.
——See Power Transmission Machinery.

Pumps.
Dean Bros. Steam Pump Works.
Gouids Mfg. Co.
Lawrence Pump & Engine Co.
Philadelphia Drying Machinery Co.
Textile Finishing Machinery Co.

Pump Governors.
Crosby Steam Gage & Valve Co.
Dean Bros. Steam Pump Works.
Walworth Mfg. Co.

Purifying & Filtration Plants.
Dodge Mfg. Co.
Hungerford & Terry.
Norwood Engineering Co.
Scaife, W. B., & Sons.

Quillers.
Buhlmann, A. W.
Foster Machine Co.
Payne, G. W., & Co.
Universal Winding Co.

Rag Pickers.
Schofield, Wm., Co.
Smith & Furbush Machine Co.

Raveling Machines.
American Raveler Co.
Arguto Oilless Bearing Co.

Raw Hide Gears.
New Process Raw Hide Co.

Reed and Harness Manufacturers.
American Supply Co.
Nuttall, George.
Walder, J.

Reducing Valves.
Crosby Steam Gage & Valve Co.
Walworth Mfg. Co.

Regulators (Pressure).
Crosby Steam Gage & Valve Co.
Walworth Mfg. Co.

Ribbon Cutters.
Cameron Machine Co.

Ribbons.
Cheney Bros.

Ring Travelers.
Shaw, Victor, Ring Traveler Co

Roofing.
Barrett Mfg. Co.

Roll Coverers.
Burnham, E. E., & Co.
Turner Mfg. Co., J. S.

Rope.
Dodge Mfg. Co.

Alphabetical Advertising Index, with page numbers, follows this list.

LOWELL TEXTILE SCHOOL

Fits for the best positions in all branches of the textile industry both commercial and manufacturing.

Complete courses in Cotton Manufacture, Woolen and Worsted Manufacture, Designing, Chemistry and Dyeing and Textile Engineering. All courses include thorough training in Mechanics, Advanced Mathematics, Mechanical Drawing, Chemistry, Decorative Art, Weaving, etc.

Complete equipment for applied instruction.

For Catalogue Address

CHAS. H. EAMES, S B., Principal,
Lowell, Mass.

Richards

We import a most complete and extensive line of **Cotton, Silk, Worsted and Fibre Machinery, Mill Supplies, Egyptian Cotton and Burlaps.** Representing the leading foreign manufacturers and dealers and keep thoroughly

Atkinson

up with the latest improvements in Textile Machines. We should be pleased to communicate with parties contemplating

&

any changes or additions in mill equipments and to send circulars describing at length our machines and supplies.

Haserick

152-8 CONGRESS STREET, BOSTON
8 CURRER STREET, BRADFORD, ENG.
PHILADELPHIA OFFICE, THE ARCADE

Rope Dressing and Preservative.
Cling-Surface Co.

Rope Transmission.
Cresson, Geo. V., Company.
Dodge Mfg. Co.

Roving Cans.
Hill, James, Mfg. Co.
Standard Fibre Co.

Roving Reels.
Scott, Henry L., & Co.

Sash Cord Braiders.
Mason Mfg. Co.

Scallop Machines.
Merrow Machine Co.

Schools.
American School of Correspondence.
International Correspondence Schools.
Lowell Textile School.
New Bedford Textile School.
Philadelphia Textile School.

Screens (Perforated Metal).
Harrington & King Perforating Co.

Secondhand Machinery.
——See Mchry. Dealers, also classified Ads.

Separators (Yarn).
Draper Co., The.

Sewing Machines and Supplies.
American Raveler Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch Bros., Somerville Machine Wks.
Curtis & Marble Machine Co.
Dinsmore Mfg. Co.
Fales, L. F.
Singer Sewing Machine Co.
Textile Finishing Machinery Co.
Tillinghast Sewing Mach. & Supply Co.
Union Special Machine Co.

Shafting, Hangers, Etc.
——See Power Transmission Machinery.

Shearing Machinery.
——See Dyeing, Drying, Bleaching and Finishing.

Sheet Metal Work.
Scaife, W. B., & Sons.

Shell Rolls.
Thurston, A. G., & Son.

Shoddies.
——See Wool Shoddies.

Shuttles.
——See Bobbins, Spools, Shuttles, Etc.

Silk Machinery.
Arlington Mch. Wks. (Arthur Birch, prop.)
Buhlmann, A. W.
Butterworth, H. W., Sons Co.
Leigh, Evan A.
Mason Machine Works.
Richards, Atkinson & Haserick.
Textile Finishing Machinery Co.

Silk Mill Supplies.
Hall, I. A., & Co.

Silk Noils.
Fawcett, Hughes.

Singe Plates.
Butterworth, H. W., Sons Co.
Taunton, New Bedford Copper Co.
Textile Finishing Machinery Co.

Singeing Machines.
Butterworth, H. W., Sons Co.
Curtis & Marble Machine Co.
Electro-Textile Co.
Leigh, Evan A.
Philadelphia Drying Machinery Co
Smith, Drum & Co.
Textile Finishing Machinery Co.

Sizing, Starch and Gums.
American Diamalt Co.
Arabol Mfg. Co.
Corn Products Refining Co.
Danker & Marston.
Scholler Bros.
Seydel Mfg. Co., The.

Skylights.
Van Noorden, E., Co.

Slashers.
Leigh, Evan A.
Lowell Machine Shop.
Riley, C. E., Company.

Soaps.
Dobbins Soap Mfg. Co.
Seydel Mfg. Co., The.

Special Machine Designers.
Cameron Machine Co.

Spindles.
Bamford & Smith.
Bodden, Wm. & Son, Ltd.
Buckley's, Benjamin, Sons.
Calder Machine Works.
Draper Company.
Easton-Burnham Co.
Hall, F. A. & P.
Hopkins Machine Works.
Jefferson, Edward & Brother.
Leigh, Evan A.
Riley, C. E., Company.
Richards, Atkinson & Haserick.
Vandegrift, Elias T.

Spindle Tubes.
Bamford & Smith.
Calder Machine Works.
Riley, C. E., Company.
Richards, Atkinson & Haserick.
Vandegrift, Elias T.

Spinning Frame Saddles.
Dixon Lubricating Saddle Co.

Spinning Rings.
Draper Company.
Hall, F. A. & P.
Howard & Bullough American Machine Co.
Whitinsville Spinning Ring Co.

Spinning Tubes.
Buckley's, Benjamin, Sons.
Hall, F. A. & P.
Jefferson, Edward & Brother.

Alphabetical Advertising Index, with page numbers, follows this list.

Spools.
—See Bobbins, Spools, Shuttles, Etc.

Spoolers.
Draper Company.
Easton & Burnham Machine Co.
Hall, F. A. & P.
Lindsay, Hyde & Co.
Lowell Machine Shop.
Payne, George W., & Co.

Stacks.
Scaife, W. B., & Sons.

Staple Stitcher.
Chas. Beck Paper Co.

Steam Boilers.
Scaife, W. B., & Sons.

Steam Engines.
American Blower Co.
Fishkill Landing Machine Co.
Providence Engineering Works.
Sturtevant, B. F., Co.
Textile Finishing Machinery Co.

Steam Heating.
American Blower Co.

Steam Jacket Kettles.
Badger, E. B., & Sons Co.

Steam Pumps.
Dean Bros. Steam Pump Works.
Goulds Manufacturing Co., The.
Walworth Mfg. Co.

Steam Specialties.
Berry Engineering Co.
Butterworth, H. W., Sons Co.
Crosby Steam Gage & Valve Co.
Sargent's Sons, C. G., Corp.
Sturtevant, B. F., Co.
Textile Finishing Machinery Co.
Walworth Manufacturing Co.

Steam Traps.
American Blower Co.
Sturtevant, B. F., Co.
Walworth Mfg. Co.

Steam Turbines.
General Electric Co.

Steel Frame Construction.
Scaife, W. B., & Sons.

Steel Surfacing.
Harrington & King Perforating Co.

Stencil Machines.
Bradley, A. J.

Stokers (Automatic).
American Ship Windlass Co.

Stop Motion for Knitting Machines.
Boss Knitting Machine Works.

Stop Motion for Looms.
—See Warp Stop Motions.

Superheaters, Foster.
Power Specialty Co.

Tags.
Kimball, A., Co.

Tanks, Tubs and Vats.
Cypress Lumber Co.
Hall, Amos H., Son & Co.
Hopkins Machine Works.
Klauder-Weldon Dyeing Machine Co.
New England Tank & Tower Co.
Textile Finishing Machinery Co.
Tolhurst Machine Works.
Scaife, W. B., & Sons.
Stearns, A. T., Lumber Co.
Woolford, G., Tank Mfg. Co.

Tapes, Braids and Edgings.
Barton, F. C.
Beacon Narrow Fabric Co.
Bias Narrow Fabric Co.
Chapin, George W.
Friedberger-Aaron Mfg. Co.
Industrial Mills Co.
Krout & Fite Mfg. Co.
Maurer, F. W., & Sons Co.
Weimar Bros.

Telephones.
Pettes & Randall Co.

Temples.
Draper Co.

Textile Schools.
—See Schools.

Thread Guide.
Palmer, I. E., Co.

Tiering Machines.
Economy Engineering Co.

Top Cutting Machines.
Wildman Mfg. Co.

Trimming Machines.
American Raveler Co.

Trade Marks.
Foulds & Galland.

Trade Mark Stamps.
Kaumagraph Co.

Trucks.
Bailey, Frank.

Turbines.
—See Water Wheels.

Turning Points.
Dickinson, T. L.

Twine.
Moore, C., & Co.
Richardson Bros.

Twist Counters.
Scott, Henry L., & Co.

Twisting Machinery.
Jefferson, Edward & Brother.
Lowell Machine Shop.
Smith & Furbush Machine Co.

Valves.
Crosby Steam Gage & Valve Co.
Jolly, J. & W.
Walworth Mfg. Co.

Variable Speed Transmission.
Cell Drier Machine Co.
Reeves Pulley Co.

Ventilating Apparatus.
American Blower Co.
American Moistening Co.
Berry, A. Hun.
Carrier Air Conditioning Co. of America.
Crocker-Wheeler Co.
General Electric Co.
Parks, G. M., Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Tolhurst Machine Works.
Sargent's, C. G., Sons.
Schnitzler, Chas. H.
Sirocco Engineering Co.
Sturtevant, B. F., Co.
Walworth Mfg. Co.

Warp Beams (Steel).
Mossberg, Frank, Co.

Warp Beam Head.
Sands Mfg. Co., T. J.

Warpers.
Draper Company.
Entwistle, T. C., Co.
Lowell Machine Shop.

Warping and Beaming Machinery.
Altemus, J. K.
Cocker Machinery Co.
Draper Company.
Entwistle, T. C., Co.
Oswald Lever Co.
Smith & Furbush Machine Co.

Warp Stop Motions.
American Textile Appliances Co.
Draper Company.
Kip-Armstrong Co.

Warp Tension Regulator.
Sands Mfg. Co., T. J.

Washers (Cloth).
American Laundry Mchy. Mfg. Co.
Arlington Mch. Works (Arthur Birch, prop.)
Birch, Arthur, Arlington Mch. Works.
Birch Bros., Somerville Machine Wks.
Butterworth, H. W., & Sons Co.
Hunt, Rodney, & Co.
Hunter, Jas., Machine Co.
Kenyon, D. R., & Son.
Philadelphia Drying Machinery Co.
Textile Finishing Machinery Co.

Washing Soda.
Ford, J. B., Co.

Watchman's Clocks.
Nanz, T., Clock Co.
Pettes & Randall Co.

Water Chemists.
Scaife, W. B., & Sons Co.

Water Purifiers and Filters.
Dodge Mfg. Co.
Hungerford & Terry.
Northern Water Softening Co.
Scaife, W. B., & Sons Co.

Water Softeners.
Dodge Mfg. Co.
Ford, J. B., Co.
Hungerford & Terry.
Northern Water Softening Co.
Scaife, W. B., & Sons Co.

Water Towers.
New England Tank & Tower Co.
Tippett & Wood.

Water Wheel Governors.
Woodward Governor Co.

Water Wheel Harness.
Dodge Mfg. Co.

Water Wheels.
Rodney Hunt Machine Co.
Smith, S. Morgan, Co.

Winders (Cotton, Woolen and Worsted).
Allen, A. W.
Altemus, J. K.
Easton & Burnham Machine Co.
Foster Machine Co.
Leigh, Evan A.
Lever, Oswald, Co
Lindsay, Hyde & Co.
Lowell Machine Shop.
Payne, Geo. W., & Co.
Universal Winding Co.

Winders (Back).
Taylor, James.

Winders (Hosiery).
Altemus, Jacob K.
Easton & Burnham Machine Co.
Foster Machine Co.
Leighton Machine Co.
Lowell Machine Shop.
Payne, G. W., & Co.
Universal Winding Co.

Wood Preserving Paints.
Carbolineum Co.

Wood Pulleys.
Dodge Mfg. Co.
Saginaw Manufacturing Co.

Wool.
Richards, Atkinson & Haserick.
Schofield, Edwin F.

Wool Cleaning Compound.
Ford, J. B., Co.

Wool Combing Machinery.
Crompton & Knowles Loom Works.
Jefferson, Edward & Brother.
Leigh, Evan A.
Richards, Atkinson & Haserick.
Riley, C. E., Company.

Wool Oil Compound.
Burckhardt & Co.
Danker & Marston.

Wool and Waste Dusters.
Jefferson, Edward & Brother.
Leigh, Evan A.
Sargent's, C. G., Sons.
Schofield, Wm., Co.
Smith & Furbush Machine Co.

Woolen and Worsted Machinery.
Altemus, Jacob K.
American Tool & Machine Co.
Arlington Mch. Works (Arthur Birch, prop.)
Bates & Robinson Machine Co.
Birch, Arthur, Arlington Mch. Works.
Birch Bros., Somerville Machine Wks.
Buhlmann, A. W.
Butterworth, H. W., Sons Co.
Crompton & Knowles Loom Works.
Curtis & Marble Machine Co.
Fales, L. F.
Firth, William, Co.
Gessner, David.

Alphabetical Advertising Index, with page numbers, follows this list.

F. W. DEAN
Mill Engineer and Architect
Wm. W. Crosby
Special Textile Assistant

Designer of Textile and other mills, Water Power Plants, Steam and Electric Plants.
Expert Service in Valuations and Damage Suits.

Exchange Building
53 State Street,
Boston, Mass.

Hood, R. H., Company.
Hunter, Jas., Machine Co.
Jefferson, Ed., & Bro.
Kenyon, D. R., & Son.
Klauder-Weldon Dyeing Machine Co.
Leigh, Evan A.
Lombard Machine Co.
Lowell Machine Shop.
Parks & Woolson Machine Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Riley, C. E., Company.
Rodney Hunt Mach. Co.
Sargent's, C. G., Sons.
Schofield, Geo. L.
Schofield, William, Co.
Smith & Furbush Machine Co.
Speed & Stephenson.
Richards, Atkinson & Haserick.
Textile Finishing Machinery Co.
Tolhurst Machine Works.
Whittle, James H., Co.
Woonsocket Machine & Press Co.

Wool Oils.
Borne, Scrymser Co.
McKerrow, H. G., Co., Ltd.

Wool Shoddies.
Slack, Wm. H. H., & Bro.

Wool Washing, Preparing and Drying Machinery.
Hunter, Jas., Machine Co.
Jefferson, Edward, & Brother.
Leigh, Evan A.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Riley, C. E., Company.
Sargent's, C. G., Sons.
Smith & Furbush Machine Co.
Richards, Atkinson & Haserick.
Tolhurst Machine Works.

Yarn Testers.
Buhlmann, A. W.
Scott, Henry L., & Co.

YARNS, THREADS, ETC.

Banding.
Sternberg, Fred, & Co.

Cotton Yarns.
Ballou Yarn Co.
Catlin & Co.
Chapin, Geo. W.
Charles, W. B.
Cone, T. H. S.
Crabb, Wm., & Co.
Devlin, Edward.
Eddy & Street.
Germania Dye Works.
Grant Yarn Co.
Greene & Daniels Mfg. Co.
Jenckes Spinning Co.
Johnson & Walker.
Littauer, Ludwig.
Mitchell, Jas. E., & Co.
Montgomery, J. R., Co.
Monument Mills.
Orswell Mills.
Salkeld, A. D., & Bro.
Sternberg, Fred, & Co.
Whitman, William, & Co.

Flax, Hemp, Jute and Ramie.
Duncan & Youngs.
Fawcett, Hughes.
Littauer, Ludwig.
Sternberg, Fred. & Co.

Gassed Yarns.
Ballou Yarn Co.
Greene & Daniels Mfg. Co.
Littauer, Ludwig.
Lorimer, E. D.
Queensbury Mills.
Sternberg, Fred, & Co.
Whitman, William, & Co.

Glazed Yarns.
Ballou Yarn Co.
Chapin, Geo. W.
Littauer, Ludwig.
Lorimer's, Wm. H., & Sons Co.
Orswell Mills.
Salkeld, A. D., & Bro.
Sternberg, Fred, & Co.
Whitman, William, & Co.

Harness Twine.
Ballou Yarn Co.
Fawcett, Hughes.
Moore, C., & Co.
Sternberg, Fred, & Co.

Hosiery and Knitting Yarns.
Boyer, B. F., Co.
Century Cotton Mills.
Chapin, George W.
Greene & Daniels Mfg. Co.
Hyde, E. S.
Littauer, Ludwig.
Jenckes Spinning Co.
Maryland Wool & Cotton Exchange.
Mitchell, James E., & Co.
Monument Mills.
Salkeld, A. D., & Bro.
Sternberg, Fred, & Co.
Whitman, William, & Co.

Mercerized Yarns.
Littauer, Ludwig.
Lorimer, E. D., & Co.
Montgomery, J. R., & Co.
Salkeld, A. D., & Bro.
Sternberg, Fred, & Co.
Whitman, William, & Co.

Mohair Yarns.
Littauer, Ludwig.
Montgomery, J. R., & Co.
Whitman, William, & Co.

Novelty Yarns, Tinsels, Silk Noils, Etc.
Jenckes Spinning Co.
Littauer, Ludwig.
Montgomery, J. R., & Co.
Queensbury Mills.
Sternberg, Fred, & Co.

Silk Yarns.
Chapin, Geo. W.
Cheney Bros.
Eddy & Street.
Ryle, Wm., & Co.
Sauquoit Silk Mfg. Co.

Woolen and Merino Yarns.
Boyer, B. F., Co.
Eaton Rapids Woolen Mills.
Eddy & Street.
Hyde, E. S.
Jenckes Spinning Co.
Littauer, Ludwig.
Salkeld, A. D., & Bro.

Woolen Yarns.
Littauer, Ludwig.

Worsted Yarns.
Boyer, B. F., Co.
Devlin, Edward.
Littauer, Ludwig.
Queensbury Mills.
Pocasset Worsted Co.
Salkeld, A. D., & Bro.
Whitman, William, & Co.

Alphabetical Advertising Index, with page numbers, follows this list.

THE AUTOMATIC LOOM BEAM HEAD
can be tightened so as to hold itself in place without collars, set-screws or blocks nailed on the beam. It will tighten on beam and comes true in circle. Listing cannot get between the beam and head. Practically a one-piece head made strong and will outlast any beam head made, with the same usage. Can be set in one minute and stays when it is set. Put on without taking the beam apart. A set of beam heads sent to any factory in the U. S. upon application with thirty days approval. In ordering send diameter of beam and diameter of head wanted.
The T. J. Sands Mfg. Co., - Winsooski, Vt.

Better Light—Better Work
Rice's Mill White

applied to the walls and ceilings of your mill will give your workers more light and aid them (and you) in their work. It can be used on wood, metal, stone, brick or concrete.

Full particulars and list of users free.

U. S. Gutta-Percha Paint Co., Providence, R.I.

Pointed Staple
Label Wire Stitcher

The only perfect method of attaching brand labels to stockings, or price and size tickets to all woven and knitted fabrics.

Uses an extremely fine wire giving a neat appearance.

Makes its own staples from a spool of wire costing a fraction of a cent per thousand.

The long, fine points penetrate the finest material without injury.

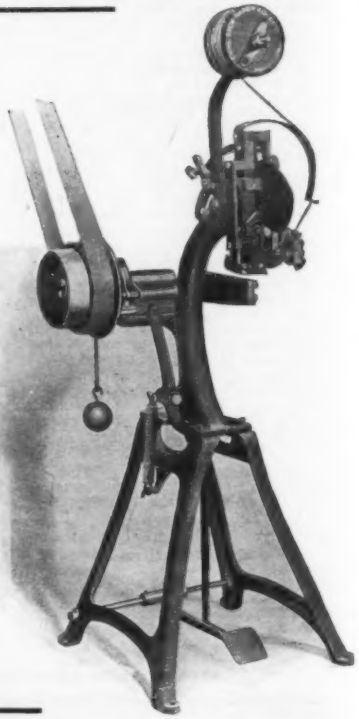
Turns the points back into the material leaving no roughness to catch or scratch.

Machines built for either foot or belt power.

Send samples of your work to be stitched, we will pay transportation both ways.

Chas. Beck Paper Co., Ltd.

609 Chestnut Street, Phila., Pa.



Pumping Water

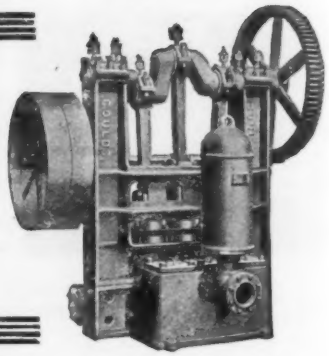
for use in the Textile Industries is a subject which has had a great deal of attention and study. It has brought forth a host of contrivances, but

Goulds Triplex Power Pumps

when operated by gas or gasolene engines, electricity or any belt power stand pre-eminent because they are so simple in operation and so nearly automatic. *Write us for complete Catalogue No. 30 on the subject.*

THE GOULDS MANUFACTURING CO., Seneca Falls, N.Y.

New York, Boston, Phila., Chicago, St. Louis, Denver, Los Angeles, San Francisco



Alphabetical Index to Advertisements.

Acme Steel Goods Co. 54
Adams, A. L. 51
Ainslie Knitting Machine Co. .. 233
Allen, A. W. 43
Almond, T. R., Mfg. Co. 50
Altemus, Jacob K. ..... —
American Blower Co. 237
American Cost Accounting Co. 202
American Diamalt Co. 212
American Laundry Machinery Mfg. Co. 20
American Moistening Co. 35
American Pulley Co., The 33
American Raveler Co. 232
American School of Correspondence 181
American Ship Windlass Co. .. 42
American Supply Co. 56
American Textile Appliances Co. —
American Textile Specialty Machinery Co. 18
Am. Tool & Machine Co. 39
Arabol Mfg. Co., The 206
Arguto Oilless Bearing Co. 227
Arlington Machine Works 46
Ashworth Bros. 56
Atteaux, F. E., & Co. 206

Badische Company 58
Badger, E. B., & Sons Co. 205
Badger Fire Extinguisher Co. .. 205
Bailey, Frank 206
Bamford & Smith 57
Barrett Manufacturing Co. 190
Barton, F. C. 197
Bates & Robinson Machine Co. 47
Beattie Manufacturing Co. 234
Beck Paper Co., Chas. 176
Berlin Aniline Works 210
Berry, A. Hun 37
Berry Engineering Co. 52
Bias Narrow Fabric Co. 197
Birch, Arthur 46
Birch Brothers 35-52
Birdsboro Steel Foundry & Machine Co. 237
Bischoff, C., & Co. 211
Blaisdell, Jr., Co., The S. 202
Bodden, Wm., & Son, Ltd. 40
Boomer & Boschert Press Co. .. 192
Borgner, Cyrus, Co. 55
Borne, Scrymser Co. 36
Boss Knitting Machine Works.. 230
Bosson & Lane 209
Boyer, B. F., Co. 198
Bradley, A. J. 195
Breedon's Son, Wm. 235
Brinton, H., & Co. 224
Broadbent, Thomas, & Sons 165
Brophy's Sons, T. 206
Brown Paint Co., Chas. H. 57
Brown, W. H., Co. 54
Buckeye Electric Co. 49
Buckley's, Benj., Son 57
Buhlmann, A. W. 30
Bull, William C. 234
Burckhardt & Co. 44
Burnham, E. E., Co. 52
Butterworth, H. W., & Sons Co. 1

Calder Machine Works 53
Cameron Machine Co. 185
Carbolineum Wood Preserving Co. 45
Carbondale Calcium Co. 211
Carrier Air Conditioning Co. of America 9
Case Brothers 229
Cassella Color Co. 209
Catlin & Co. 195
Cell Drier Machine Co. Inside Back Cover
Century Cotton Mills 196
Chaffee Bros.' Company 51
Chapin, Geo. W. 200
Charles, William B. 197-202
Cheney Bros. 209
Claes & Flentje 233
Climax Machine Co. 228
Cling Surface Mfg. Co. 166
Cocker Machinery Co. 48
Cone, T. H. S. 196
Continental Latch Needle Co. .. 235
Cooper, Chas. 229
Cooper-Hewitt Electric Co. 43
Corey, Wm., Co. 235
Corn Products Refining Co. 21
Crabb, Wm., & Co. 37
Cramer, Stuart W. 12
Crane Mfg. Co. 229
Cresson, Geo. V., Co. 32
Crocker-Wheeler Co. 46
Crompton & Knowles Loom Works 27
Crosby & Gregory 179
Crosby Steam Gauge & Valve Mfg. Co. 192
Curtis & Marble Machine Co. .. 53
Cypress Lumber Co. 214

Danker & Marston 60
Darrow-Mann Co. 32
Davidson, J. F. 204
Dean Bros. Steam Pump Works 50
Dean, F. W. 175
Detroit Lubricator Co. 55
Devlin, Edward 182
Dickinson, Thos. L. 214
Diehl Mfg. Co. 232
Dienelt & Eisenhardt 55
Dinsmore Mfg. Co. 36
Dixon Lubricating Saddle Co. .. 51
Dixon, Jos., Crucible Co. 50
Dobbins Soap Mfg. Co. 57
Dodge Mfg. Co. 23
Dodge Needle Co. 235
Draper Company 3
Drouve, The G., Co. ..... —
Dubied, Edouard, & Co. 224
Duncan & Youngs 197

Easton-Burnham Co. 26
Eaton Rapids Woolen Mills 198
Economy Engineering Co. 44
Eddy & Street 194
Elliott & Hall 179
Entwistle, T. C., Co. 53
Eppiers, John, Mach. Works 194
Eureka Fire Hose Mfg. Co. 232
Evans Friction Cone Co. 52
Excelsior Knitting Machine Mfg. Co. 222
Excelsior Needle Co. 235

Farbenfabriken of Elberfeld Co. 210
Fairbairn - Lawson-Combe-Barbour, Ltd. 28
Fales, L. F. 41
Farrell Foundry & Machine Co. 27
Fawcett, Hughes 197
Felton, S. A., & Son Co. 56
Ferguson, John W. 179
Firth & Foster Co. 205
Firth, William, Co. 34
Fishkill Landing Machine Co. .. 45
Ford, J. B., Co. 188
Foster Machine Co. Outside Back Cover
Foulds & Galland 179
Friedberger-Aaron Mfg. Co. 216
Fries, John W. 52

Gandy Belting Co. 46
Garland Mfg. Co. 192
Geisenheimer & Co. 211
General Electric Co. 19
General Mach. Works 228
Gerry, W. Geo., & Son 50
Gessner, David 171
Globe Dye Works Co. 204
Gormly, Robert W., & Co. 230
Goulds Mfg. Co. 176
Grant Yarn Co. 194
Graton & Knight Belting Co. 224B
Greene & Daniels Mfg. Co. 194
Griscom-Spencer Co. Outside Back Cover
Grosser Knitting Machine Co. .. 217

Haedrich, E. M. 206
Hall, Amos H., Son & Co. 211
Hall, F. A. & P. 56
Hall, I. A., & Co. 57
Halton's, Thomas, Sons 34
Harding, Fancourt & Scull 182
Harrington & King Perforating Co. 30
Hart, Chas. 198
Haskell-Dawes Machine Co. 28
Heathcote, John, & Son 44
Hemphill Mfg. Co. 229
Hepworth, John W., & Co. 234
Hill, James, Mfg. Co. 53
Hoffman, U. S., Co. 225
Home Bleach & Dye Works .. 204
Home Insurance Co. 203
Hood, R. H., Company 55
Hopkins Machine Works ..... —
Hopkinson Dyeing & Textile Works 206
Howard & Bullough Am. Machine Co. 62
Howard Bros. Mfg. Co. 47
Howson & Howson 179
Hungerford & Terry 214
Hunt, Rodney, Machine Co. ..41-236
Hunter, Jas., Machine Co. 15
Hussa, Theo. F. 39
Hyde, Edward S. 196
Hydraulic Press Mfg. Co. 48

India Alkali Works 195
Industrial Mills Co. 196
International Correspondence Schools 187
Ives, L. T., Co. 235

Jamaica Dyewood & Chemical Co. 206
Jefferson, Edw., & Bro. 54
Jenckes, E., Mfg. Co. 226
Jenckes Spinning Co. 196
Johnson, Chas. A., & Co. 182
Johnson & Walker 194

Kalle & Co. 210
Kaumagraph Company 42
Kenyon, D. R., & Son 41
Keystone Latch Needle Co. 235
Kilburn, Lincoln & Co. 54
Kip-Armstrong Co. 38
Kitson Machine Shop 7
Klauder-Weldon Dyeing Machine Co., The 166
Klipstein, A., & Co. 207
Krout & Fite Mfg. Co. 196

Lamb Knitting Machine Co. 233
Lane, W. T., & Bro. 35
Lawrence Pump & Engine Co. .. 41
Leckie, James, & Son 228
Leigh, Evan Arthur 13
Leighton Machine Co. 222
Lestershire Spool & Mfg. Co... 31
Lever Oswald Co. 14
Leyland, Thomas, & Co. 17
Lindsay, Hyde & Co. 235
Littauer, Ludwig 195
Little, Arthur D. 201
Lombard Machine Co. Outside Back Cover
Lorimer's, Wm. H., Sons Co. .. 204
Lowell Crayon Co. 198
Lowell Machine Shop 2
Lowell Textile School 173

Maryland Wool & Cotton Exchange 194
Mason Brush Works ..... —
Mason Machine Works 10
Mason Mfg. Co. 234
Maurer, F. W., & Sons Co. 196
Mayo Knitting Machine & Needle Co. 230

Mayo, Geo. D., Machine Co. ... 216
McKenna, Dr. Chas. F. 51
McKerrow, H. G., Co., Ltd. 29
Merrow Machine Co. 223
Merwin Paper Co. 194
Metallic Drawing Roll Co. 53
Metz, H. A., & Co. 208
Minnich Machine Works 47
Mitchell, Jas. E., Co. 195
Montgomery, J. R., Co. 194
Monument Mills 194
Moore, C., & Co. 194
Mossberg, Frank, Co. 46
Mossberg Wrench Co. 38
Murphy Iron Works 37

Nanz, T., Clock Co. 51
National Automatic Knitter Co. 230
National Laundry Machinery Co. 29
New Bedford Textile School 48
New England Butt Co. 221
New England Tank & Tower Co. 212
New Process Raw Hide Co. 22
New York & New Jersey Lubricant Co. 202
N. Y. Revolving Portable Elevator Co. 181
Northern Water Softener Co. .. 208
Norwood Engineering Co. 214
Nuttall, George 179
Nye & Tredick Company 225

Oneida Steel Pulley Co. 33
Orswell Mills 196

Palmer, I. E., Co. 31
Parks & Woolson Machine Co. .. —
Parks, G. M., Co. 16
Pawtucket Dyeing & Bleaching Co. 204
Paxton & O'Neill 231
Payne, Geo. W., Co. 232
Pearson, J. T. 234
Peerless Company, The 204
Pettes & Randall Co. 196
Philadelphia Drying Mchy. Co. 16A
Philadelphia Textile Mchy. Co. 240
Philadelphia Textile School 48
Phillips Pressed Steel Pulley Works 26
Pocasset Worsted Co. 198
Power Specialty Co. 51
Pratt, Robt. G. 54
Providence Engineering Works.. 45
Providence Machine Co. 40

Queensbury Mills 198
Reeves Pulley Co. Inside Back Cover
Rhoades, J. E., & Sons 197
Richards, Atkinson & Haserick 173
Richardson Bros. 204
Riley, C. E., Company 165
Roessler & Hasslacher Chemical Co. 213
Root, C. J., Co. 195
Ryle, William, & Co. 200

Saco & Pettee Machine Shops .. 5
Saginaw Mfg. Co. 55
Salem Elevator Works 237
Salkeld, A. D., & Bro. 195
Sands Mfg. Co., T. J. 175
Sargent's, C. G., Sons 25-236
Sauquoit Silk Mfg. Co. 200
Scaife, W. B., & Sons Company 236
Schaum & Uhlinger 38
Schieren, Chas. A., Co. 16B
Schnitzler, Chas. H. 214
Schofield, Edwin F. 202
Schofield, Geo. L. 179
Schofield, William, Co. 55
Scholler Bros. Co. 54
Schuchardt & Schutte 171
Schwartz, L. H. A., & Co. ..... —
Scott, Henry L., & Co. 36
Scott & Williams 8
Sellers, Wm., & Co. 33
Seydel Mfg. Co. 210
Shaw, Victor, Ring Traveler Co. 56
Shultz Belting Co. 50
Singer Sewing Machine Co. ... 224A
Sirocco Engineering Co. 237
Smith, Drum & Co. 25
Smith, S. Morgan, Co. 236
Smith & Furbush Machine Co. 238-239-240
Societe Anonyme Electro-Textile 39
Solway Dyeing & Textile Co. .. 206
Speed & Stephenson 49
Spence & Rideout 234
Spindler, E. O. 224-233
Stafford Co., The 4
Stafford & Holt 226
Standard Fibre Co. 31
Standard Machine Co. 231
Stearns, A. T., Lumber Co. 212
Steel Heddle Mfg. Co. 56
Stephenson Mfg. Co. 43
Sternberg, Fred. & Co. 195
Sturtevant, B. F., Co. 169
Sweet & Doyle 57

Sykes, Walter F., & Co. 211

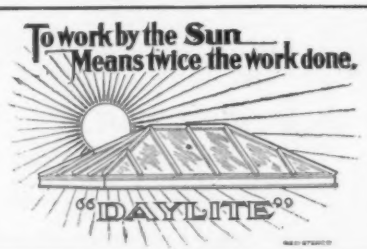
Taunton-New Bedford Copper Co. 54
Taylor Gravity Under-Feed
Tayleor Gravity Under-Feed Stoker 42
Taylor, Jas. 223
Tibbetts, E. L., Spool Co. 56
Textile Finishing Machinery Co. Inside Front Cover
Textile Machinery Co. 54
Textile Machine Works 235
Thayer, Edward M., & Co. 210
Thurston, A. G., & Son 57
Tillinghast Machine & Supply Co. 53
Tippett & Wood 43
Tolhurst Machine Works 38
Tompkins Bros. Co. 231
Turner Mfg. Co., J. S. 57

Union Special Machine Co. 221
U. S. Gutta-Percha Paint Co. .. 176
United States Mica Co. 42
U. S. Silk Conditioning Co. 198
Universal Winding Co. 11
Utica Willowvale Bleaching Co. 205

Vandegrift, Elias T. 55
Van Noorden, E., Co. 178

Walder, J. 46
Walther, Otto 215
Walworth Manufacturing Co. Outside Back Cover
Wardwell Needle Co. 235
Waters, D. F. 55
Watson-Flagg Engineering Co... 39
Weimar Bros. 191
Western Thread Co., The 205
Westinghouse Electric & Mfg. Co. 42
Whitin Machine Works 6
Whitman & Co., William 195
Whittle, James H., Co. 47
Whitinsville Spinning Ring Co... 45
Whiton, D. E., Machine Co. 44
Wildman Mfg. Co. 219
Williamson, W. S. 34
Wilson & Co., Barnsley, Ltd. .. 40
Woodward Governor Co. 236
Woolford, G., Wood Tank Mfg. Co. 212
Woonsocket Mach. & Press Co. 24

Young & Co., J. S., Ltd. 213



Van Noorden Skylights

ADMIT DAYLIGHT NOTHING ELSE

Applicable wherever overhead light is desired

Send for Catalogue

E. Van Noorden Company

944 Mass. Ave., Boston, Mass.

PATENTS CROSBY & GREGORY,

JOHN C. EDWARDS NATHAN HEARD LOUIS C. SMITH

Old South Building, Washington Street, Boston.

Telephone, Main 3593, Boston. **Office Established 1854.** Cable Address, "Aniline."

Patents secured in the United States and all other countries. Reissues obtained. Interferences conducted. Suits brought and defended for infringements, and searches made as to the validity of patents. Prepared to give special and expert attention to cases involving knowledge of cotton, wool, leather and metal working machinery, including boots and shoes and electrical, chemical and metallurgical inventions and steam engineering. We have had wide experience in textile patents cases. Correspondence solicited. No charge for preliminary advice. Personal consultation best when possible.

JOHN W. FERGUSON,

Builder and General Contractor.

Mill Building a Specialty.

References made to some of the largest mill owners in the Middle States, including Clark Thread Co., Newark, N. J.; Barbour Flax Spinning Co., Paterson, N. J. and others.

253 Broadway, N. Y. 90 Washington St., Paterson, N. J.

SENT FREE

A complete catalog of all

Textile Books

OUR descriptive catalog contains a list of all the books in the English language on textile subjects that are in print and that are of present value, classified under the different subjects to which they pertain. This catalog should be in the possession of every mill man. It will be sent free upon application. New books on textile subjects are being published frequently. We can supply any textile or technical book, whether of our own publication or not, at lowest prices. We can also give information and prices of foreign textile publications, etc. We are headquarters for everything in the line of textile literature and information.

LORD & NAGLE CO., Boston, Mass.

Publishers of the Textile World Record

Carpet Manufacture

BY FRED BRADBURY

The only complete work on the subject.

A handsome volume, bound in dark green cloth, gold lettering; over 300 pages; 250 illustrations and 3 colored plates.

Price $3.00—Carriage Prepaid.

A reliable book on carpet and rug manufacture that will strongly appeal to the manufacturer and designer. It is written in an easy style, combining text and illustrations in a manner that gives the perfect technical book.

The chapters are: Designing, Color, Brussels Carpets, Wilton Carpets, Tapestry Carpets, Axminster Carpets, Chenille Axminster Carpets, Kidderminster and Scotch or Ingrain Carpets.

LORD & NAGLE CO. Publishers, Boston, Mass.

Counselors at Law
HOWSON & HOWSON
Solicitors of Patents

PHILADELPHIA, West End Building, 32 South Broad Street
NEW YORK, 38 Park Row
WASHINGTON, 918 F Street

TRADE MARKS

Registration and Litigation

FOULDS & GALLAND

Counsellors at Law

BROAD EXCHANGE BUILDING

25 Broad Street - - New York

Elliot Cloth Folder and Measurer

FOR PRINT WORKS, GINGHAM AND COTTON, MILLS, BLEACHERIES, ETC., ETC.

Manufactured by ELLIOT & HALL, 54½ Hermon St., Worcester, Mass. Send for circular.

Geo. Nuttall, 128 East Sixth Street, CHESTER, PA.

Manufacturer of

Heddle Frames
Beamers' Raithes and Dobby Chain

NEW AND SECOND-HAND WOOLEN Machinery

GEO. L. SCHOFIELD, 123 No. Front St., PHILA., PA.

Agent for the Weston Hydro Extractor.

Wants, For Sale, Etc.

Rates 15 cents a line per issue when replies are sent in care of TEXTILE WORLD RECORD to be forwarded. If replies go direct to advertiser the rate is 10 cents per line per issue. Count seven words to a line and include side head and address. Cash must accompany the order for these ads. If such ads. are "displayed" the rate is $2.00 per inch single column each time. The publishers reserve the right to reject any advertisement.

Men Wanted.

WANTED

A man with general knowledge of the manufacture of Silk Hosiery for position of superintendent or assistant manager. Address "A.B.C." care Textile World Record, Boston, Mass.

KNITTER WANTED

Thoroughly practical Knitter and Fixer to run Small Plant of Scott & Williams and Wildman Machines. Prefer married man to go west and locate in Illinois. Address or call, Room 920, 346 Broadway, New York. Name salary and references and full information as to abilities.

LOOM FIXER WANTED

A loom fixer on Tapes and Narrow Fabrics. Must reside in Phila. Address W. A. B., Textile World Record.

SALESMAN—TRAVELING

Territory in any state, to sell direct to the retail trade men's cotton hosiery. Can be handled in connection with any other noncompeting line of goods. For full particulars address, with references.

S. T., Textile World Record, Boston, Mass.

SUPERINTENDENT WANTED

For a four-set cotton underwear knitting mill, about December 1st. J. D. CHASTAIN, Secretary,
Oklahoma Cotton Mills Co, Chickasha, Oklahoma.

WANTED

In plush mill, one experienced dyer, as assistant; one knife man on double plush looms; one shear foreman, not necessarily experienced in plush. Permanent employment for good men.

COLLINS & AIKMAN CO., Manayunk, Philadelphia, Pa.

WANTED.

Agent to handle a humidifying machine in the territory adjacent to and from an office in Philadelphia. Address "Humidifier," Textile World Record, Boston.

Partner Wanted.

Wanted experienced knitter on Lamb machines one who understands sewing machines to take interest in established factory—advertiser operates retail store in heart of Chicago and uses the product of plant—requirements about $3,000. Address

"Partner," Textile World Record, Boston.

BUYER AND REPRESENTATIVE

Member Manchester, (England) Cotton Exchange wishes to act as buyer and representative for American thread consumers. Financial standing AA1. Correspondence invited. Address "Returns," T. W. R., Boston.

ACCOUNTANT

Experienced professional; investigates accounts, examines, audits books, verifies assets and liabilities, prepares balance sheets, statements, etc., systems, cost accounts; in or out of New York.

DIPLOMAT, Box 20, Textile World Record,
123 Liberty St., New York.

UNION. NEW YORK

Offers free water, free lights, exemption from local taxes, good banking and shipping facilities. Industries seeking location write, Secretary Board of Trade Union, New York.

FOR SALE

1—44" Tolhurst Hydro Extractor, belt driven, 44" copper basket.
1—Hurricane Stock Dryer apron 8' x 40'.
1—Lord & Bowler Dry Process Carbonizer.
1—60" Philadelphia Textile Garnet Picker or Shredder.
1—Rag Duster.
2—Woolen Rag Pickers.
1—Fearnaught Mixing Picker, 36" Apron and Automatic Feeder.
1—Vacuum Machine Company's stock dyeing machine.
1—Klauder Welden Skein Dyeing machine and Slubber.

The above machines are in good second-hand condition and can be seen in operation. For price and further particulars, address

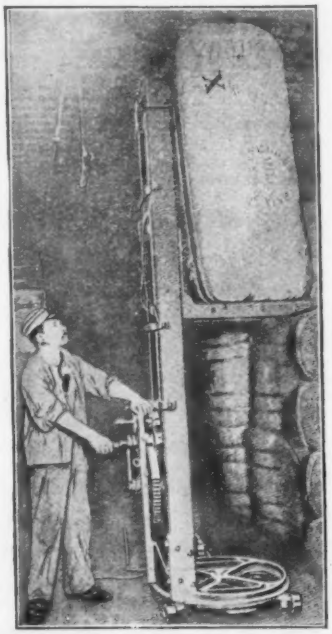
Ontario Industrial Company

Oswego, N. Y.

For Sale Water Power. 10 acre pond 17 feet, head 5 miles from Worcester, Mass. For particulars address Box 126, Leicester, Mass.

POSITION WANTED as manager or superintendent of Elastic Web Factory; applicant thoroughly expert in this line; address "Web," Box 2685, Boston, Mass.

Here's a Time and Labor Saver for Your Mill

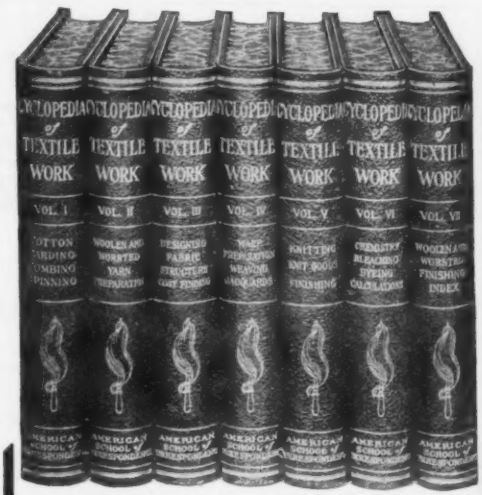


The New York Revolving Portable Elevator can be used wherever boxes, barrels, bales or heavy packages have to be piled up. Its saving in time, labor, and breakage quickly pays for it. Built in any size or height. Write for descriptive catalog.

New York Revolving Portable Elevator Co.
Jersey City, N. J.

Simplex Yarn Tables.

Showing equivalent sizes of different systems of numbering yarn; cotton, woolen, worsted, etc., so that the sizes of different standards may be quickly compared. Also contains a number of other valuable yarn tables for designers, manufacturers and knitters. PRICE 50c. Textile World Record, Boston.



LEARN TO BE BOSS

YOU CAN LEARN TO BE BOSS—you CAN get the necessary training by devoting a small portion of your spare time each day to careful study of the most interesting, practical treatise published on the textile industry.

CYCLOPEDIA OF TEXTILE WORK

The seven volumes are handsomely bound in half morocco leather and contain 2,656 pages. Size 7x10 inches. Realizing that the text alone would be of little value to the practical textile worker we have included in this work over 2000 diagrams, designs drawings, tables, formulas, etc., illustrating every section of the books.

FREE FOR EXAMINATON

These seven big volumes will be sent you upon receipt of the coupon. You can examine them for five days, absolutely FREE of charge. If you are not satisfied with the books notify us and will have them returned at our expense. If, however, you keep the books, send us $2.00 and $2.00 every month until you have paid the special price of $19.80. The regular price is $42.00.

IMPORTANT SUBJECTS COVERED.

Cotton Fibre—Picking—Carding—Combing—Drawing—Spinning—Wool-Washing—Woolen Carding—Worsted Carding—Woolen Spinning—Worsted Spinning—Designs—Sateens—Velvet Jacquard and Leno Cotton—Woolen and Worsted Warp Preparation—Plain Weaving—Fancy Looms—General Loom Fixing—Spring Needle Knitting—Hosiery and Underwear Knitting Machines—Textile Chemistry—Textile Coloring—Mordants—Dyestuffs—Analysis of Fabrics—Finishing—Processes of Finishing Standard Fabrics—Machines Used.

FREE! Send your order before Aug. 1st, and we will include you FREE, for one year, as a monthly supplement, the

TECHNICAL WORLD MAGAZINE

a live up to-the-minute, $1.50 monthly, crowded with special articles on the most recent applications of the principles covered in the Cyclopedia; splendidly illustrated with scores of special photographs.

FREE OFFER COUPON

American School of Correspondence, Chicago, U. S. A.

Please send set Cyclopedia of Textile Work for 5 days' free examination; also Technical World for 1 year. I will send $2.00 within 5 days and $2.00 a month until I have paid $19.80; otherwise I will notify you and hold the books subject to your order. Title not to pass until fully paid.

Name .....

Address .....

Occupation .....

Employer .....

(Tex. World Rec. 7-09.)

An Opportunity for a Big Man

One of New England's large textile concerns—manufacturers of worsteds and woolens—is in need of an executive head. A man who is capable of taking full management—who is fitted to assume the entire control of the business.

Capitalized at Half-a-Million Dollars

The annual output of this concern's mills approximates in value about one million dollars.

The business demands the utmost in attention. Other and greater interests claim the owner's consideration. It is essential, therefore, that the burdens of management be placed upon other shoulders.

Hence, this rare opening—this lifetime opportunity—for a man *big enough* to meet requirements.

Only one of *proven worth* is eligible to this concern. To him the privilege of buying an interest is extended. And added consideration will be given where the ability to purchase exists. This, however, is not an *essential*.

The requirements of the position are as follows:

An expert textile man of such ability as to

—Assume entire control of the mills and the employees.

—Dictate prevailing styles and fabrics and anticipate trade requirements.

—Assure that the output measures up to standard in quality and quantity.

—Handle judiciously all matters of finance.

—Provide ways and means for the improvement of conditions, wherever possible.

—Prevent small leaks and obviate large ones.

—Promote the highest degree of efficiency in the work of subordinates.

—In short, initiate and executive ability combined with expert textile knowledge, is demanded by this position.

The matter of salary has not been fixed. If a ten-thousand-dollar a year man can prove he is worth it—that sum will be given.

In writing, please neglect no detail that will aid in determining as to eligibility.

Every communication will have full attention and will be treated in the strictest confidence.

Address H. S. B., Box 07, TEXTILE WORLD RECORD, 144 Congress Street, Boston, Mass.

To Rent or Lease

Manufacturing property, suitable for light manufacturing of any description, Substantial buildings, 25,000 sq. ft. floor space, Equipped with two (2) boilers, heated by steam, Automatic sprinklers, Fire pump and lighted by electricity if desired. 100 H. P. of water which is unequaled for washing, dyeing etc. Adjacent to railroad.

Address W. F. Robertson & Co.,
Hinsdale, N. H.

Duxbury's
English Calender Roll Papers
For Embossing and Other Calenders.
Chas. A. Johnson & Co.
Sole Agents for America
55-57 Franklin Street, - New York

Harding, Fancourt & Scull,
OILS, CHEMICALS and SOAPS
Tuscan Softener, Turkey Red Oil, (all grades) Soluble Oils and Olive Oil.
1095 Germantown Ave., PHILADELPHIA

For Sale or Rent
CHEAP
Woolen Mill of 40 Looms

Situated at Seneca Falls, N. Y., develops about 300 horse power. Apply to **Kurt Moebius** care Vietor & Achelis, 66 Leonard St., N. Y. **Chas. H. Palmer,** Genesee Valley Trust Co., Rochester, N. Y., or **Norman J. Gould,** Seneca Falls, N. Y.

WHAT DO YOU DO WITH YOUR ODD LOTS OF YARN?
Send samples and lowest cash price to
EDWARD DEVLIN, Yarn Dealer
1743 Hope Street, Philadelphia, Penna.
who buys this class of goods and pays best prices.

TEXTILE BOOKS
ALL THE GOOD ONES
Send for Catalog
Lord & Nagle Company
Textile Publishers BOSTON, MASS.

Situations Wanted.

The following advertisements are a portion of those of superintendents and overseers, of whom full particulars are on file at this office. Manufactu ers who may be in need of such men may address them in care of Textile World Record, Boston, or state their requirements directly, and the addresses of suitable men will be furnished without charge.

Mr. C. T. Donlevy, a practical mill overseer and superintendent, who has a wide acquaintance with mill men, gives special attention to this department. He would be pleased to hear from any of his friends who may be interested. Address Textile World Record, 144 Congress St., Boston, Mass.

COTTON SUPERINTENDENTS.

Superintendent of Cotton Mill or assistant superintendent of large mill; worked on all styles of goods from plain to the most fancy fabric including lenos, corduroys and velvets; familiar with all makes of modern cotton machinery on the market today; also old fashioned Draper, Mason, Paulvins and Whitin machines; will not go to Conn., West, South or Canada; 23 years of age, married; good reference. 4450, Textile World Record, Boston, Mass.

Wanted; superintendency of bleaching, dyeing and finishing by a thoroughly practical man; Englishman, 28 years of experience on all kinds of cotton piece goods, laces, embroideries, especially lawns, also knit goods, yarns, organdies, etc.; can guarantee satisfaction; furnish A1 references and willing to go anywhere. 4453, Textile World Record, Boston, Mass.

Cotton Superintendent or overseer of large spinning room; worked on sheetings, shirtings, prints and hosiery yarns, numbers 8s to 60s; familiar with the Saco & Pettee, Lowell, Mason, Fales & Jenks, Curtis & Marble, H. & B., Draper, D. & B., etc.; will not go to Penn., N. Y., N. J., West, South or Canada; 49 years of age, married; good reference. 4422, Textile World Record, Boston, Mass.

Superintendent or Assistant Superintendent; worked on combed and carded hosiery, and warp, fine and coarse; familiar with all makes of machinery; will not go West or Canada; 25 years of age, married; good reference. 4423, Textile World Record, Boston, Mass.

Superintendent of a Yarn or plain goods mill, carder or ring spinner; worked on ducks, tickings, shirtings, sheetings and grain bags; familiar with all makes of cotton machinery; will not go West, South or Canada; 49 years of age, married; good reference. 4401, Textile World Record, Boston, Mass.

Superintendent or General Manager of a cotton mill; familiar with all machines used in a cotton mill; 45 years of age, married; good reference. 4412, Textile World Record, Boston, Mass.

Cotton Superintendent; worked on all classes of goods from 4 to 40, also ducks and drills; familiar with Fales & Jenks, Howard & Bullough, Saco & Pettee, Lowell & Whitin makes of machinery; 30 years of age, married; good reference. 4285, Textile World Record, Boston, Mass.

Superintendent; worked on all kinds of cotton goods, grey, colored, plain, fancy and duck; will not go to Canada; 51 years of age, married; good reference. 4281, Textile World Record, Boston, Mass.

Superintendent of a cotton mill; worked on yarns from 4s to 100s; familiar with Lowell, H. & B., Whitin, Fall River, Saco and City machines; will not go anywhere but to the Southern States; 43 years of age, married; good reference. 4252, Textile World Record, Boston, Mass.

Superintendent of a Cotton Mill or overseer of finishing; worked on ducks, denims, ginghams, domets, awnings, canton flannels, ticking, scrim, etc.; has a good general knowledge of machinery in all departments; prefers New England; 38 years of age; good reference. 4355, Textile World Record, Boston, Mass.

WOOLEN SUPERINTENDENTS.

Superintendent or Overseer; worked on 188-200 needle plaited work; 128-160-176-188-200-220 needle, cotton, wool and mercerized hosiery; 240 needle ladies' hose; familiar with the E. Jenckes, Banner, and Geo. D. Mayo footers; H. Brinton, Scott & Williams ribbers, and loopers of different makes; 20 years of age; good reference. 4463, Textile World Record, Boston, Mass.

Agent or Superintendent; worked on nearly all kinds of woolens and some worsteds; familiar with nearly all makes of machinery; 53 years of age, married; good reference. 4459, Textile World Record, Boston, Mass.

Superintendent or Agent; worked on woolen, worsted and cotton hosiery; familiar with all makes of machinery; 47 years of age, married; good reference. 4456, Textile World Record, Boston, Mass.

Superintendent, boss weaver, designer, or both; worked on plain and fancy worsteds, woolen **cassimeres, cheviots, overcoatings, kerseys, tourist** cloth, and all kinds of ladies' dress goods; thoroughly understands and can fix all kinds of Crompton looms as well as the latest Knowles looms; will not go to Canada; 54 years of age, married; good reference. 4315, Textile World Record, Boston, Mass.

Superintendent of a small yarn or weave mill, or carder or spinner in mill of 15,000 to 25,000 spindles; worked on 8 to 76 white and 3 to 36 blended yarns; familiar with Fales & Jenks, Whitin, Howard & Bullough, Lowell, S. & P., also Brooks & Dorey; will not go East or Canada; 28 years of age, American, married; good reference. 4325, Textile World Record, Boston, Mass.

Superintendent of worsted yarn spinning mill, especially top dyed yarns, French system; worked on raw stock, dyed and worsted yarns, on French and English systems, including combing; familiar with Platt Bros., Oldham, Asa Lees, Lowell Machine Shop, Fales & Jenks, Pawtucket and foreign makes of machinery; will not go West or South; 33 years of age, married, German; good reference. 4322, Textile World Record, Boston, Mass.

Superintendent; worked on fancy worsteds and woolens, plain and fancy serges, piece dyes, mercerized and resist colored piece dyes, in fact all classes of men's wear; familiar with all kinds of machinery used in the weaving of the above goods; will not go to New Hampshire, Vermont, Pennsylvania, New York, New Jersey, West, South or Canada; 46 years of age, married, English; can speak German fluently; good reference. 4172, Textile World Record, Boston, Mass.

Superintendent or Agent; worked on woolens and worsteds for men's and women's wear; familiar with all kinds of machinery; will not go to Penn., N. Y., N. J., West, South or Canada; 43 years of age, married; good reference. 4424, Textile World Record, Boston, Mass.

Superintendent of a Woolen Mill or overseer of dyeing; worked on uniform goods, ladies' dress goods, yarn and piece dyed worsteds, overcoatings, fancy suitings, cross dyes, raw stock, indigo blues, yarn and piece dyes, etc.; familiar with all makes of woolen machinery; 44 years of age; good reference. 4405, Textile World Record, Boston, Mass.

WOOLEN CARDERS.

Overseer of Carding or spinning, or superintendent; worked on ring spinning from 4s to 100s, carding, colored, combed, and carded up to 24 hank; 34 years of age; good reference. 4465, Textile World Record, Boston, Mass.

Superintendent, or overseer of carding or spinning; worked on all numbers of carded yarns; familiar with all American makes of machinery; will not go West, South or Canada; can fill any position in yarn mill; 47 years of age, married; good reference. 4447, Textile World Record, Boston, Mass.

Overseer of Woolen Carding; worked on all kinds of goods, wool, cotton and shoddy mixes; familiar with American and English cards and condensers; will not go West, South or Canada; 50 years of age, married; good reference. 4394, Textile World Record, Boston, Mass.

Overseer of Woolen Carding; worked on cassimeres, cheviots, blankets, flannels, dress goods, broadcloths, all wool, wool, shoddy and cotton mixtures; familiar with Davis & Furber, Lombard, Cleveland and Smith cards; will not go to Penn., N. Y., N. J., West, South or Canada; good reference; 56 years of age. 4404, Textile World Record, Boston, Mass.

Overseer of Worsted Carding and combing; worked on all classes of goods; familiar with both English and American makes of machinery; 29 years of age; good reference. 4398, Textile World Record, Boston, Mass.

Overseer of Carding or superintendent; worked on yarns from 16s to 120s counts, carded and combed, white and colored for weaving hosiery and lace goods; familiar with all makes of machinery; 21 years of age, married; good reference. 4418, Textile World Record, Boston, Mass.

COTTON CARDERS.

Overseer of Carding or spinning in a large or superintendent of a small cotton mill; worked on yarns (warps), 6-20, and map yarn; familiar with Asa Lee, English, Mason, Whitin and Saco & Pettee machines; will not go to Maine or Canada; 23 years of age; good reference. 4442, Textile World Record, Boston, Mass.

Second Hand of cotton card room or overseer of small room; worked on American cotton, 7/8 to 1 3/8 staple, 1 to 15 hank; Egyptian cotton, 8 to 15 hank, carded and combed; familiar with Howard & Bullough, Dobson & Barlow, Saco & Pettee, also some experience on Providence fly frames; will not go to Me., N. J., South or Canada; 30 years of age, married; good reference. 4443, Textile World Record, Boston, Mass.

Overseer of Cotton Carding or assistant superintendent; worked on all classes of cotton goods, both white and colored; familiar with American and English makes of machinery; will not go to N. Y., N. J., West, or South; 39 years of age, married; good reference. 4455, Textile World Record, Boston, Mass.

Overseer of Cotton Carding, or good second hand position; worked on sheetings, prints, hosiery yarns, coarse and fine numbers from 1/2 hank to 25 hank rovings; familiar with Whitin, Lowell, H. & B., Platt, and other makes of machinery; 39 years of age, married; good reference. 4399, Textile World Record, Boston, Mass.

Overseer of Cotton Carding; worked on sheetings, prints, denims, flannels, coarse and fine, colored and white; familiar with all makes of machinery; will not go West, South, Canada, or N. J.; 36 years of age, married; good reference. 4389, Textile World Record, Boston, Mass.

WOOLEN FINISHERS.

Overseer of Finishing or second hand; worked on nearly all grades of men's, women's and children's cotton hosiery; will not go to Mass., R. I., Conn., Me., N. H., Vt., N. Y., West or Canada; 20 years of age; good reference. 4437, Textile World Record, Boston, Mass.

Overseer of Finishing, wet and dry, overseer of burling and sewing or assistant superintendent in finishing department; worked on all kinds of fancy worsteds, resist and piece dyes, woolens and understands the London shrunk process; familiar with Parks & Woolson, Hunter, Curtis & Marble, Gessner, Miller, Spencer & Rideout, Hyde presses, etc., in fact all the machinery used in a fancy worsted or piece dye mill; 38 years of age, married; good reference. 4430, Textile World Record, Boston, Mass.

Overseer of Finishing, assistant superintendent or assistant designer; worked on all kinds of woolen and worsted goods, high grade broadcloths, overcoatings, kerseys, beavers, and dress goods; familiar with German, American and English makes of machinery; 43 years of age, married; good reference. 3575, Textile World Record, Boston, Mass.

Overseer of Finishing, wet, dry or both; worked on all kinds of woolen dress goods, thibets, kerseys, cheviots, flannels of all kinds, worsted dress goods, in fact about everything in the line of dress goods; familiar with all makes of machinery in an up to date mill; will not go West, South or Canada; 45 years of age, married; good reference. 4417, Textile World Record, Boston, Mass.

Overseer of Woolen or worsted finishing, dry finisher or shearer; worked on medium to low grade goods, beavers, meltons, cheviots, friezes, chinchillas, serges and worsteds; familiar with both English and American makes of machinery; prefers a position in or near Philadelphia; 42 years of age, married; good reference. 4336, Textile World Record, Boston, Mass.

COTTON FINISHERS.

Overseer of Finishing or second hand in large mill; worked on all kinds of woolens and worsteds; familiar with all kinds of machinery used in a finishing room; will not go to Pa., West, South or Canada; 48 years of age; good reference. 4436, Textile World Record, Boston, Mass.

Overseer of Finishing, fulling or gigging; worked on face finished goods, meltons, kerseys, thibets, chinchillas, cheviots, serges, cassimeres, worsted casket cloths and cotton warp goods; all makes of machinery; good reference; 35 years of age, single. 4133, Textile World Record, Boston, Mass.

Overseer of Finishing; worked on cassimeres, kerseys, worsteds, dress goods, cotton mixes, etc.; familiar with all kinds of woolen finishing machinery; will not go West, South or Canada; 37 years of age, married; good reference. 4419, Textile World Record, Boston, Mass.

Overseer of Hosiery Knitting or superintendent; worked on cotton, worsted and all grades of wool; familiar with the Mayo, Jenks, Boss, Huse, Wildman, Scott & Williams and Boulton makes of machinery; will not go South; 44 years of age, married; good reference. 4361, Textile World Record, Boston, Mass.

Overseer of Finishing; worked on all kinds of goods, mostly on men's wear; familiar with all makes of machinery; 50 years of age, married; good reference. 4308, Textile World Record, Boston, Mass.

POSITIONS OPEN

We have several first class positions open for overseers, fixers and finishers for hosiery mills, also first class fixers, boss knitters, finishers and superintendents for underwear mills. Also for a superintendent for a mill manufacturing gloves and mittens. Good reliable steady men only. For further information, address Registry Department, Textile World Record, Boston, Mass.

KNITTERS.

Superintendent of a Knitting or cotton yarn mill; worked on underwear, sweaters, wool and cotton; familiar with the Davis & Furber, Dobson & Barlow, cotton system, making cotton and merino, on some machinery; 50 years of age; good reference. 4467, Textile World Record, Boston, Mass.

Superintendent of an Underwear Mill or overseer of finishing in a large plant. Worked on ladies' underwear and novelty. Familiar with all makes of finishing machinery and expert on Merrow machines. Will not go West, South or Canada. 45 years of age, married. 4674, Textile World Record, Boston, Mass.

Superintendent of Knitting, or overseer of large knitting or seaming room; worked on nearly all kinds of knit goods; familiar with Crane's Twist Drill, Tompkins, Nye & Tredick, and several kinds of sewing machines used in a knitting mill; 40 years of age, married; good references; has had 25 years of constant experience in the knitting business. 4178, Textile World Record, Boston, Mass.

Overseer or assistant superintendent of hosiery knitting; have worked on all grades of work from coarse wool to the finest mercerized cotton; familiar with Standard, Acme, Mayo, Hemphill, Scott & Williams and Brinton makes of machines; 35 years of age, married; good reference. 4155, Textile World Record, Boston, Mass.

Overseer of Ring Spinning, warping, winding, beaming or twisting; worked on bed spreads, sheetings, prints, taffeta, fire hose and automobile tire fabric; familiar with all makes of machinery; will not go to Canada; 27 years of age, married; good reference. 4344, Textile World Record, Boston, Mass.

Overseer of Woolen Spinning; worked on all classes of woolens, wool and shoddy, cotton and shoddy mix from 1 to 8 run; familiar with Davis & Furber and Johnson & Bassett machines; will go anywhere for a good position; 41 years of age, married, American; good reference. 4346, Textile World Record, Boston, Mass.

Overseer of the Mule Room or frame spinning; worked on all kinds of goods; familiar with Mason and English mules; will not go to Me., N. H., Vt., Pa., West, South or Canada; 50 years of age, married; good reference. 4353, Textile World Record, Boston, Mass.

Overseer of Mule Spinning or frames and mules; worked on both fine and coarse goods, but chiefly fine; familiar with English and American makes of machinery; will not go West, or South; 39 years of age, married; good reference. 4356, Textile World Record, Boston, Mass.

KNITTERS.

Overseer of Knitting; worked on merino and cotton nets, elderdowns, jerseys, buffalo fur cloths, astrachans, glove linings and plain and vertical stripes; familiar with Tompkins, Campbell & Clute, Crane and Gormley machines; will not go South; 39 years of age, married; good reference. 4313, Textile World Record, Boston, Mass.

Overseer of Woolen Spinning; worked on ladies' dress goods; familiar with the Davis & Furber machines; will not go to Pa., N. Y., N. J., West, South or Canada; 49 years of age, married; good reference. 4362, Textile World Record, Boston, Mass.

Overseer of Spinning; worked on wool, silk and cotton mixes from one to ten run; familiar with D. & F., J. & B., Paul, English, and Bancroft mules; will not go to Me., N. H., Vt., Pa., West, South, or Canada; 42 years of age, married; good reference. 4342, Textile World Record, Boston, Mass.

Superintendent of a knitting mill; worked on men's heavy weight ribbed goods mostly, also light weights, and women's wear; familiar with the Michael & Wildman, Nye & Tredick, Scott & Williams, and Fisher makes of machinery; also nappers and sewing machines to some extent; 39 years of age, married; good reference. 4382, Textile World Record, Boston, Mass.

Overseer of Knitting; worked on ladies' seamless hose, plain, fancy and ribbed top; familiar with the Acme, Scott & Williams, Hemphill, Banner and Standard makes of machinery; 24 years of age, married; good reference. 4368, Textile World Record, Boston, Mass.

Overseer of Knitting or Fixer; worked on high grade goods in plaited work, mercerized, silk, lisle, wool and cotton; familiar with the McMichael, Scott & Williams, and Nye & Tredick machines; will not go West, South, or Canada; prefers N. Y. State or Wis.; 31 years of age; good reference. 4371, Textile World Record. Boston, Mass.

Superintendent or Overseer of Knitting; worked on all classes of underwear; familiar with Cooper, Wildman, Scott & Williams, Nye & Tredick, Tompkins, Crane, Campbell & Clute and all makes of sewing machines; will not go South or Canada; 50 years of age, married; good reference. 4408, Textile World Record, Boston, Mass.

Superintendent, Boss Knitter, sewing machine fixer, or both; worked on sweaters, sweater coats, men's underwear, spring and latch needle, also ladies' underwear; familiar with all makes of knitting machinery; 42 years of age, married. 4413, Textile World Record, Boston, Mass.

Overseer of Knitting; worked on 14, 16, 18, 20 Georgia wool, heavy and light weights; 18, 20, 22, 24 Georgia fleece and 24, 26 Georgia balbriggans; familiar with all makes of machinery; will not go South or Canada; 36 years of age, married; good reference. 4421, Textile World Record, Boston, Mass.

Boss Knitter; worked on ribbed underwear, gloves, mittens and leggins; familiar with the Lamb, Nye & Tredick, Wildman, Scott & Williams and Champion machines; married; good reference. 4288, Textile World Record, Boston, Mass.

Cutting Machines

Every Textile Manufacturer has his own special problems. If these problems relate to cutting cloth, paper, felt, &c., in any way, shape or form we are always glad to volunteer our help in solving them.

61 Poplar Street
Brooklyn, N. Y.

Cameron Machine Co.

Special Textile
Machine Designers

WOOLEN SPINNERS.

Overseer of Spinning; worked on all kinds of woolens; familiar with the Davis & Furber machines; will not go to Pa. or Canada; 46 years of age, married; good reference. 4466, Textile World Record, Boston, Mass.

Overseer of Woolen Spinning; worked on all kinds of woolen goods, fine and coarse yarns, from 5/8 to 10 and 11 run, also second spinning, all kinds of double of twist, and wool, cotton and shoddy mixes; familiar with Davis & Furber mules; will not go to Pa., N. Y., N. J., West, South or Canada; 33 years of age, married; good reference. 4435, Textile World Record, Boston, Mass.

Overseer of Spinning; worked on woolens, cassimeres and dress goods; familiar with Davis & Furber, and Johnson & Bassett mules; 40 years of age, married; good reference. 4433, Textile World Record, Boston, Mass.

Overseer of Spinning or good second hand position; worked on all kinds of goods, including knit goods; familiar with Davis & Furber and Johnson & Bassett mules; will not go West, South, Canada, Pa., N. J.; 28 years of age, married; good reference. 4434, Textile World Record, Boston, Mass.

COTTON SPINNERS.

Overseer of Spinning, spooling, warping, twisting and quilling; has worked on blankets, dress goods, shirtings, linen and cotton towelings; made all kinds of yarn, both warp and filling, all counts; familiar with Whitin, Mason, Fales & Jenks and Howard & Bullough makes of machines; 34 years of age, married; good reference. 4440, Textile World Record, Boston, Mass.

WOOLEN DESIGNERS.

Designer or Assistant; worked on fancy worsteds, men's wear, dress goods, broad cloths and fancy woolens; familiar with all makes of machinery used in wool or worsted mills; 25 years of age, married; good reference. 4449, Textile World Record, Boston, Mass.

Designer or Overseer of weaving; worked on ladies' dress goods, overcoatings, cassimeres, worsted broad cloths, and men's wear; familiar with Crompton, Knowles and jacquard looms; will not go to Canada; 50 years of age, married; good refsrence. 4452, Textile World Record, Boston, Mass.

Designer or Assistant; might accept position as sewing machine fixer; worked on worsted and woolen cloth, blankets and flannels; 26 years of age. 4464, Textile World Record, Boston, Mass.

COTTON DESIGNERS.

Designer for Textile Fabrics, quilts, linens, etc.; worked on all kinds of bed spreads, linen damasks, etc.; familiar with card cutting and repeating machines, jacquard looms, etc.; 44 years of age, married; good reference. 4314, Textile World Record, Boston, Mass.

Designer or Overseer of weaving; worked on cotton worsteds, resist worsteds, and all fancy yarn dyes, worsteds, also woolens, suitings, and overcoatings; will not go West, South or Canada; 30 years of age, married; good reference. 4329, Textile World Record, Boston, Mass.

Assistant Designer; worked on cotton and woolen goods; has a practical knowledge of what a loom can do; 40 years of age, married; good reference. 4278, Textile World Record, Boston, Mass.

WOOLEN WEAVERS.

Overseer of Weaving; worked on all grades of woolens and worsteds; familiar with the Crompton & Knowles looms; will not go West or to Canada; 38 years of age, married; good reference. 3687, Textile World Record, Boston, Mass.

Overseer of Weaving; worked on woolens and worsteds, all grades for men's wear and dress goods; familiar with Crompton & Knowles looms, electric stop motion, Draper magazine; will not go West, South or Canada; 40 years of age, married; good reference. 4457, Textie World Record, Boston, Mass.

Overseer of Weaving; worked on worsteds and all kinds of fancy woolens; will not go to Vermont, West, South or Canada; familiar with Crompton, Knowles and Thayer looms; 33 years of age; good reference. 4454, Textile World Record, Boston, Mass.

Boss Weaver, spooler and slasher, or both; designer, asst. supt. or supt. of a small mill; worked on all kinds of plain goods, both coarse and fine, up to 120s and 200s filling, dobbies, jacquards, etc.; familiar with all makes of machinery, slashers, warpers and spoolers; 39 years of age, married; good reference. 4458, Textile World Record, Boston, Mass.

Overseer of Woolen Weaving; worked on all classes of woolen or worsted goods, shawls of all kinds included; familiar with the Crompton & Knowles, dobby and jacquard machines; will not go to Penn., N. Y., N. J., West, South, or Canada; 47 years of age, married; good reference. 4407, Textile World Record, Boston, Mass.

Overseer of Weaving or loom fixer; worked on worsteds, woolens, overcoatings, and ladies' goods; prefers the Knowles looms, but can take charge of any of the latest English makes of fast running or box looms; will not go West, South, or Canada; 30 years of age, married; good reference. 4392, Textile World Record, Boston, Mass.

COTTON WEAVERS.

Overseer of Weaving, cloth room or dressing, weaving preferred; worked on fine and coarse, white and colored work; familiar with the Crompton, Lowell, Whitin and Mason machines; will not go West; 52 years of age, married; good reference. 4441, Textile World Record, Boston, Mass.

Overseer of Weaving; worked on lenos, fancies of all kinds, ducks, denims, awnings, ticks, sheetings and prints; familiar with Crompton, Knowles, Whitin, Draper, Lowell and Mason machines; 38 years of age, married; good reference. 4445, Textile World Record, Boston, Mass.

Designer or Boss Weaver; worked on beavers, overcoatings, kerseys, men's wear and ladies' dress goods; familiar with Knowles and plain Crompton looms; will not go to Penn., West, South or Canada; 30 years of age, married; good reference. 4409, Textile World Record, Boston, Mass.

Overseer of Weaving or loom fixer; worked on fancy worsteds, cotton mixes, cassimeres, cheviots, fancy unions, overcoatings, dress goods, and piece dyes; familiar with Knowles fancy looms, Crompton & Knowles, 4 by 4 box and Crompton & Thayer, 4 by 4 box; will not go West, South or Canada, Pa., N. J., or Vt.; good reference; 47 years of age, married. 4378, Textile World Record, Boston, Mass.

Boss Weaver or Designer, or superintendent of a small mill; worked on all kinds of ladies', men's and boy's suitings; familiar with the Crompton & Knowles and Crompton & Thayer looms; will not go to Penn., West, South or Canada; 53 years of age, married; good reference. 4395, Textile World Record, Boston, Mass.

DYERS.

WANTED SUPERINTENDENCY of Bleaching, Dyeing and Finishing by a thoroughly practical man, English, 28 years experience on all kinds of Cotton piece goods, Laces, Embroideries and Lawns especially. Also Knit goods, Yarns, Organdies, etc. Can guarantee satisfaction, furnish A1 references, and willing to go anywhere. Address B. D. F., Textile World Record.

Overseer of Dyeing; worked on worsted yarn, piece dyes, raw stock, wool and cotton shoddy, etc.; familiar with the Klauder, Weldon and Delehanty machines; will not go West, or South; 40 years of age, married; good reference. 4462, Textile World Record, Boston, Mass.

Overseer of Dyeing; worked on wool, cotton, shoddy, half wool, knit goods (underwear), but no hosiery, bleaching, etc.; has a good theoretical and practical experience; familiar with any machine used in above work; will not go to Maine or Canada; 30 years of age; good reference. 4461, Textile World Record, Boston, Mass.

Overseer of Dyeing or second hand; worked on wool, cotton and shoddy for coverts, cassimeres, cloakings, dress goods, piece dye worsteds, men's wear and dress goods, worsted and cotton yarns to stand cross dyeing and union piece dyes; will not go South; 28 years of age; good reference. 4460, Textile World Record, Boston, Mass.

Silk Overseer of Dyeing, or second hand; worked on spun silk, embroidery, button hole twist, silk for fast and plain, also understands alizarine work, Persian berry yellow, etc., organzine from colors or blacks, best line is spool and spun, plain and fast familiar with dyeing machines made at Amsterdam, N. Y.; 33 years of age, married; good reference. 4451, Textile World Record, Boston, Mass.

Overseer of Dyeing in small room or second hand; worked on skein warps and mercerized yarns; 38 years of age, married; good reference. 4444, Textile World Record, Boston, Mass.

Overseer of Dyeing; worked on cotton blankets, flannels, shirtings, damask awnings, denims and damask goods; familiar with Klauder & Weldon, Delehanty, vacuum, raw stock, short and long chain machines; prefers New England; 35 years of age, married; good reference. 4438, Textile World Record, Boston, Mass.

BLEACHERS AND DYERS.

Dyer, Bleacher or dyestuff demonstrator; worked on cotton and worsted skeins, cotton warps, cotton and wool raw stock, all kinds of knit goods, underwear, roll, garment and hosiery; familiar with all kinds of dyeing and drying machinery; will not go to Canada; 41 years of age, married. 4244, Textile World Record, Boston, Mass.

A Shuttle

Don't move in the same old rut all your life without ever advancing to better work or better salary. You can secure in your own home, in your spare time, and without leaving your present work, the most powerful force for promotion in the world. Thousands have obtained increased earnings through the I. C. S. Write us a postal today, stating the position you would like to obtain. Advice of experts and booklet free.

International Correspondence Schools
Box 882, Scranton, Pa.

WOOLEN DRESSERS.

Boss Dresser or second dresser in large mill; worked on all kinds of fancy woolens and cotton mixes; familiar with Davis & Furber makes of machinery; 35 years of age, married; will not go to Maine, Vermont, Pennsylvania, New York, New Jersey, West, South, or Canada; good reference. 4175, Textile World Record, Boston, Mass.

Overseer of Dressing, winding, spooling and twisting; experienced on all grades of men's wear, dress goods, in fancy piece dyes, resist piece dyes, rain and woolen cloth; familiar with Cleveland and Davis & Furber dressers; any make of spoolers, any kind of winders, and Altemus machines; will not go to Penn., N. J., West, South or Canada; 33 years of age, married; good reference. 4426, Textile World Record, Boston, Mass.

MASTER MECHANICS.

Master Mechanic; worked on all kinds of textile and paper machinery; understands all makes of engines and electrical machinery; will go anywhere for a good position; 42 years of age, married; good reference. 4305, Textile World Record, Boston, Mass.

Master Mechanic; familiar with all kinds of machinery; 37 years of age, married; good reference. 4332, Textile World Record, Boston, Mass.

Master Mechanic or Millwright; worked on all kinds of machinery used in woolen, worsted or cotton mills; will not go to Penn., N. Y., N. J., West, South or Canada; 35 years of age, married; good reference. 4402, Textile World Record, Boston, Mass.

MISCELLANEOUS.

Overseer of Burling and mending or cloth examiner in a clothing house; worked on all classes of fine and coarse woolens and worsteds; 42 years of age, married; good reference. 4448, Textile World Record, Boston, Mass.

Sewing Machine Fixer; worked on flat and rib underwear; familiar with the Wilcox, overedge trimmers, lockstitch, Merrow, Union Special, Horn covering machines, overlock, also the Singer seamers; will not go to Me., Conn., Pa., West, South or Canada; 24 years of age; good reference. 4446, Textile World Record, Boston, Mass.

Mill Machinist or boss fuller; worked on dress goods, kerseys, meltons, thibets, suitings, overcoatings and flannels; familiar with all kinds of machinery; will not go to Pa., Me. or Canada; 26 years of age; good reference. 4439, Textile World Record, Boston, Mass.

Knitting Machine Fixer; worked on lisle, mercerized, woolen and cotton goods; familiar with the Geo. D. Mayo, Acme, Jenckes, looping machines and ribbers; will not go to R. I., Me., Vt., N. J., West or South; 23 years of age, single; good reference. 4225, Textile World Record, Boston, Mass.

Overseer of Woolen Dressing; worked on woolens and worsteds; familiar with all kinds of machinery; will not go to Penn., N. Y., N. J., West, South or Canada; 40 years of age, married; good reference. 4410, Textile World Record, Boston, Mass.

Electrical Engineer; has worked for gas and electric concerns; familiar with the Baldwin and Wood engine, general electric generator, general electric switch board, Manger, Lewis and George & Forster; will not go to Me., N. H., Vt., Pa., N. Y., N. J., West, South, or Canada; 25 years of age; good reference. 4347, Textile World Record, Boston, Mass.

Washing Plush

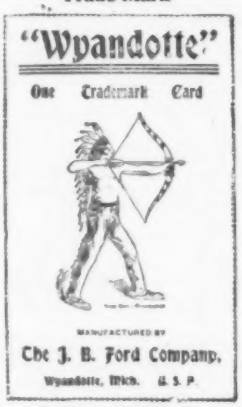
When dry, after being washed, plush often has an unplesant odor.

This odor is almost invariably traced to the excess soap left in the plush from the washing process.

If a small amount of

Wyandotte Textile Soda

None Genuine except with a card bearing this Trade Mark



In Every Package.

is used with the soap in washing and also in the rinse water all such odors will be eliminated. The Wyandotte Textile Soda also insures a perfectly clean, soft and lofty plush. Why not then try Wyandotte Textile Soda, or write us for further information.

Order from your supply house.

The J. B. FORD CO., Sole Mnfrs.

Wyandotte, Mich., U. S. A.

This Soda has been awarded the highest prize wherever exhibited.

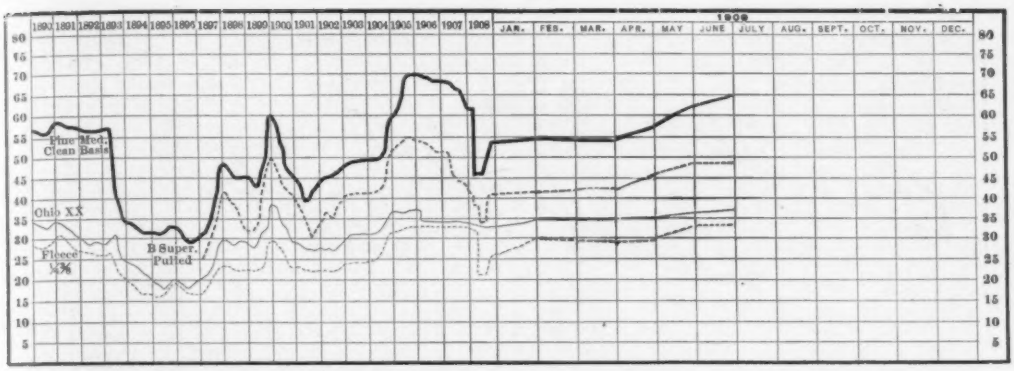


CHART SHOWING RANGES OF PRICE OF WOOL TO DATE.

The Wool Market.

Sales of wool have been small in both number and volume because of the small stocks in the Western and seaboard markets. The manufacturers with few exceptions are well supplied with wool, stored both at their mills and in the city warehouses. Prices are firm and the few buyers who have been recently in the market have found it impossible to obtain any concessions from holders of the staple.

Manufacturers have advanced the prices of their goods to correspond with the increased cost of the raw material and are confident that the advance can be easily maintained. The foreign wool markets are firm, but show no indication of a further advance. Domestic prices are near the importing point. This fact makes it impossible to push domestic prices much higher unless there is a corresponding advance abroad. Another factor that will prevent higher prices is the resort to the use of cotton and wool by-products.

---

*Rhode Island, Woonsocket. The Paragon Worsted Co. has been incorporated with capital stock of $100,000 to operate the Sayles & Prendergast Mill, recently purchased by Fred E. Warren, as reported. The incorporators are Fred E. Warren, Frederic Delude, and Joseph C. Mailloux. The mill will be put in operation within a short time.

Rhode Island, Woonsocket. The property of the Rhode Island Dyeing & Finishing Corporation, including buildings and water privileges, has been sold to Harrison W. Bowker of Worcester at mortgagee's sale. It is likely the property will be resold as Mr. Bowker bid it in for the bondholders.

South Carolina, Aiken. It is said that good progress is being made in the work of getting subscriptions for the proposed cotton mill.

South Carolina, Dillon. The office of the Hamer Cotton Mills has been moved here. The management is the same as that of the Dillon Cotton Mills and the Maple Cotton Mills of this place.

South Carolina, Edgefield. An order has been issued by the Court to sell the property of the Edgefield Mfg. Co.

*South Carolina, Graniteville. The capital stock of the Graniteville Mfg. Co. has not been increased, as reported previously, and the capacity will not be enlarged. The report originated from the fact that they recently applied for the renewal of their charter which will expire shortly.

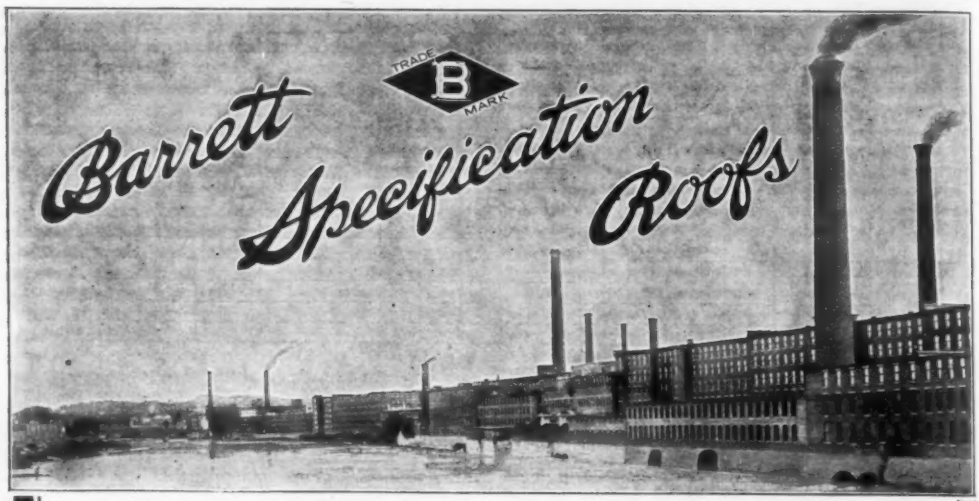
South Carolina, Reedy River Factory. The stockholders of the Reedy River Mfg. Co. have voted to ask for the appointment of a receiver for the company. This will not necessitate the closing of the plant, as arrangements have been made to continue manufacturing without any interruption. Their financial troubles began in the severe flood last fall, as reported at that time.

*Texas, Cleburne. It is not likely that the proposed cotton mill will be built for some time. A company has been organized under the title of the City Heights Cotton Mill Addition Co., which proposes to sell a number of town lots at a stipulated price, the purchaser of each lot to receive a number of shares in the cotton mill. After a certain number of lots have been disposed of a $100,000 cotton mill will be built.

Virginia, Norfolk. T. H. Synon of the Board of Trade plans to organize a $100,000 cotton yarn company.

*Virginia, Abingdon. There is nothing definite about the cotton mill proposition in which W. E. Mingea is interested. Mr. Mingea and other officers of the Virginia-Carolina Railway Co. are merely looking into the possibility of establishing a cotton mill here.

*North Carolina, Fayetteville. It is now reported that a $500,000 cotton mill is assured, but it cannot be learned who is backing the project.



1,500,000 Square Feet of Roofs

THIS illustration includes a partial view of the great Textile Mills at Lowell, Mass. The total roof area in this group is over *1,500,000 square feet*. A number of these roofs cover merchandise and machinery of great value. A leak might cause considerable loss.

These roofs are constantly subjected to the action of acid fumes and coal smoke. Manufacturing conditions in textile mills require also the maintenance of a humid interior atmosphere which attacks the roofing from the under side, making tin roofs for instance, quite impossible.

Only one form of roof covering meets these requirements economically, and that is, roofs of Coal Tar Pitch, Tarred Felt and Gravel, laid along the lines advocated in The Barrett Specification. All this vast area is accordingly covered in this way. Many of these roofs are now from 20 to 35 years old, and are in good serviceable condition.

The average cost (first cost plus maintenance) of roofs of this character is less than 1-4 cent per square foot per year of service—a truly remarkable showing. Barrett Specification Roofs are without doubt the most economical and satisfactory for manufacturing plants,

A copy of the Barrrett Specification, ready for incorporation into building specifications will be mailed to any architect, engineer or owner on request. Address our nearest office.

THE BARRETT MANUFACTURING CO.,

New York Philadelphia Chicago Boston Cleveland Pittsburg Cincinnati
Kansas City Minneapolis New Orleans St. Louis London, Eng.

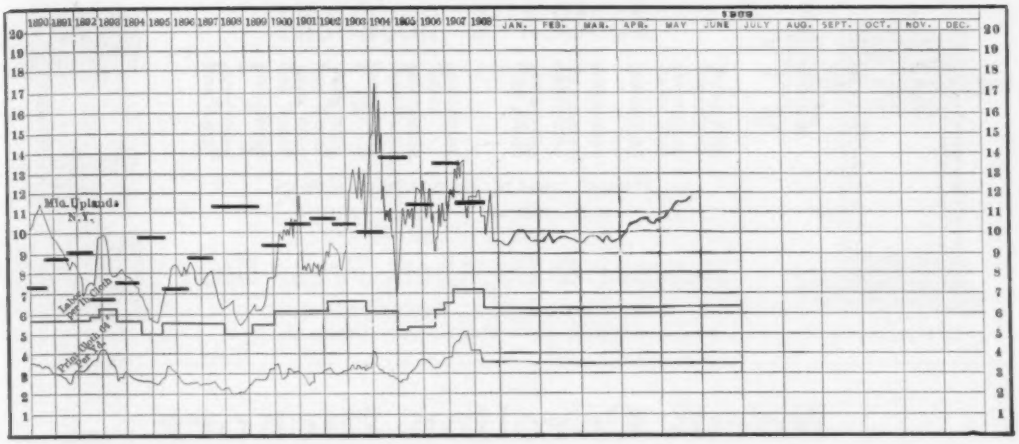

1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908
1909
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
Mid. Uplands N.Y.
Lancashire Spinners' Cost
Philadelphia Spot

CHART SHOWING RANGE IN THE PRICE OF COTTON TO DATE.
The short, heavy, horizontal lines indicate the size of the cotton crops in millions of bales.

The Cotton Market.

Prices have advanced in response to unfavorable weather reports from the cotton belt and in spite of unfavorable reports from the foreign goods market. Lancashire is talking short time because of high priced cotton and large stocks of unsold yarn. Under these conditions the advance in prices has somewhat the appearance of manipulation. The movement into sight from Sept. 1 to June 25 is estimated by the Chronicle as follows:

1908-09,	June 25	13,080,326 bales.
1907-08,	June 26	10,932,713 bales.
1906-07,	June 28	13,037,201 bales.
1905-06,	June 29	10,574,623 bales.
1904-05,	June 30	12,640,041 bales.
1903-04,	July 1	9,842,043 bales.

The world's visible supply on June 25 is estimated by the same authority at 3,327,040 bales, as compared with 2,723,702 bales at corresponding date in 1908, 3,608,793 bales in 1907, and 3,098,081 bales in 1906.

*Massachusetts, Lowell. The new buildings, which it was reported several weeks ago would be built for the Massachusetts Cotton Mills, will be under construction within a short time. Contract has been made with W. H. Ward Co. to erect a power house and an extension to the dye house. A concrete retaining wall also will be constructed.

FACTS AND GOSSIP.

Massachusetts, New Bedford. The capital stock of the Whitman Mills has been increased to $2,000,000 by the issue of a 33 1/3 per cent. stock dividend.

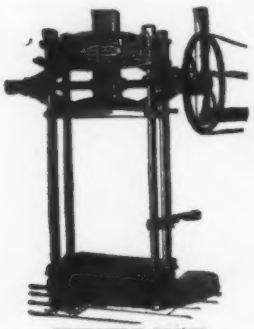
Massachusetts, North Dighton. Transfer of the Chadwick Print Works to the control of the Algonquin Printing Co., Fall River, Mass., has been completed, and hereafter the North Dighton plant will be operated on Algonquin prints. It is not definitely decided whether the plant will be run under the name of the Algonquin Printing Co. or the Chadwick Print Works. James A. Chadwick is superintendent.

Massachusetts, Springfield. The Howard Ramie Fibre Co. is at present interested in building a mill in Springfield. A short time ago they were in touch with the Holyoke Business Men's Association regarding the location of a plant in Holyoke.

Massachusetts, Uxbridge. At a meeting of the directors of the C. A. Root Co. it was voted to change the name of the corporation to Wacantuck Mills and to increase the capital stock from $100,000 to $125,000.

*North Carolina, Greensboro. E. P. Wharton has purchased the Pomona Cotton Mfg. Co.'s property for $285,000, and if his original plans are carried out, the mill will soon be in operation under the name of the Pomona Mills, Inc.

MANUFACTURERS OF
WEIMAR BROS. Cotton Mercerized Tapes,
SPOOL TAPES, BINDINGS AND NARROW FABRICS FOR UNDERWEAR AND OTHER TRADES.
Phone Connections. Works, 2046-48 Amber Street, PHILADELPHIA, PA.



KNUCKLE JOINT.

BOOMER & BOSCHERT

BALING PRESSES

ARE THE STANDARD

Hydraulic or Knuckle Joint
Any Size .. Any Power

Boomer & Boschert Press Co.

338 West Water S., SYRACUSE, N. Y.
Southern Agent, A. H. WASHBURN, Charlotte, N. C.

HYDRAULIC.

North Carolina Hickory

Picker Sticks

Are Best

We take the entire picker stick output of a factory which is located in the Piedmont section of North Carolina where the best hickory in the world is grown. We use only selected second growth North Carolina hickory and require a careful inspection of each stick before shipment, so that every stick sent out is guaranteed to be straight grained, free from knots and not to warp. We can promptly fill orders for sticks of ordinary sizes.

GARLAND MFG. CO.

SACO, MAINE

Formerly Loom Picker Co., Biddeford, Maine

G TRADE MARK

For 25 YEARS We have held OUR REPUTATION as Progressive Manufacturers. Do not forget this when ordering GAGES.

ORIGINAL SINGLE BELL CHIME WHISTLE
Harmonious
Far Reaching
Pleasing.

A Truthful Gage is the only GOOD GAGE.

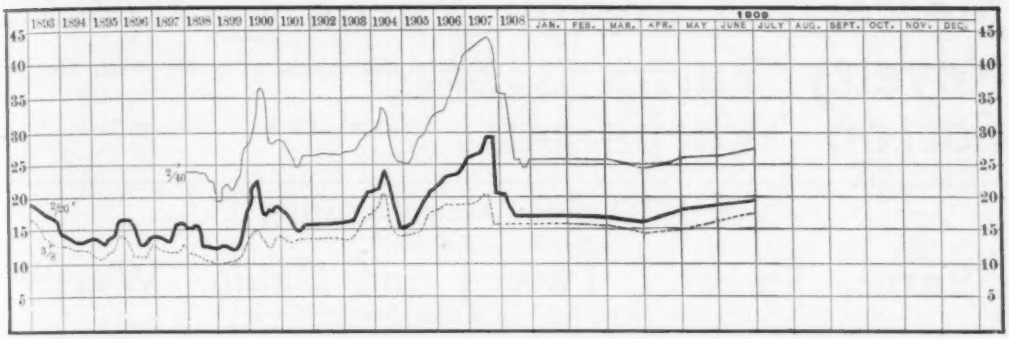
This Company manufactures, besides the above a large variety of articles used in connection with steam engines and boilers, all of which are standard quality, and may be relied upon. *Send for Catalogue.*

CROSBY STEAM GAGE & VALVE CO.

Stores: BOSTON, NEW YORK, CHICAGO, LONDON.

Office and Works: BOSTON, MASS.

Yarn Department.



GRAPHIC CHART SHOWING RANGE IN THE PRICE OF COTTON YARN TO DATE.

The Cotton Yarn Market.

Cotton during the past few days has been very active and advancing steadily until it has reached the highest point of the year. While yarns have not fully followed the advance in cotton the demand has been stimulated and a fair advance in price is obtainable. Business in some lines is quiet for prompt delivery, but the prospect for fall delivery is good in all lines. Yarns will undoubtedly have to go up to a higher level, as there does not seem to be much prospect of a break in cotton, there is a strong demand for yarn for distant delivery. Spinners, however, have not been inclined to accept such business.

Prices today are about as follows:

Eastern Cops.

6s	18½
8s	18½
10s	19
14s	20
16s	20½
18s	21
20s	21½
22s	22
24s	22½
26s	23
30s	23½
34s	24½
36s	25½
40s	26½

On cones, ¾c. more up to 14s; 1c. more from 15s to 22s; 1½c. from 23s to 35s, and 2c. above that.

Eastern Two-Ply Skeins, Carded Peeler.

12s	21
14s	22
18s	22½
20s	23
24s	24
26s	24½
30s	25½
36s	29
40s	31
45s	34
50s	38
55s	40
60s	45

Eastern Two-Ply Warps, Carded Peeler.

2/30s	25½
2/36s	29
2/40s	31
2/45s	34
2/50s	38
2/60s	45

Egyptian Weaving Yarns.
Single Skeins Combed.

30s	36
36s	38
40s	39
45s	41
50s	46
55s	49
60s	53
70s	58

The Philadelphia Market.

7s and coarser	17
8s and 9s	17½
10s	18
12s	18½
14s	19
16s	19½
18s	20
20s	20½

THE J. R. MONTGOMERY CO.,

Windsor Locks, Conn.

MANUFACTURERS OF

Mercerized Cotton Yarns Gives the High Silk-Like Lustre in Knit Goods and Woven Fabrics.

Novelty Yarns Boucle, Bourette and Spirals, in Cotton, Wool, Worsted, Mohair and Silk.

Cotton Warps on Beams, Jack Spools and Tubes. In Fancy, Twist, Colors and Printed.

Greene & Daniels Manufacturing Co.,

Combed, Carded and Gassed

Yarns, Threads, Twines and Chain Warps

Dye Sulphur Blacks Direct in Cops, Cones or Tubes.

Colored and Bleached Yarns Furnished in any manner desired by the trade.

Pawtucket, R. I.

MONUMENT MILLS,

Manufacturers of

White, Colored, Fancy and Double Twist

COTTON WARPS

HOUSATONIC, MASS. 4s to 60s.

WM. C. JOHNSON J. TOWNSEND WALKER

Johnson and Walker

COTTON YARNS

All Nos. and Descriptions

Accounts Solicited

P. O. Box 659 Banigan Building, Room 528 PROVIDENCE, R. I.

C. MOORE & CO.,

Manufacturers of

TWINES, THREADS AND YARNS

Jacquard Harness Twines of all kinds on hand and made to order.

S. W. Cor. Fifth and Market Sts., Phila.

MARYLAND WOOL AND COTTON EXCHANGE

906-908 Streeper St., Baltimore, Md.

High Grade Hosiery and Weaving Yarns all colors.

Operating Well Equipped Bleachery, Dyehouse, Spool, Cone and Twist Mill.

EDDY & STREET,

Cotton, Woolen

Yarns and Braids

Worsted, Spun Silk.

PROVIDENCE, R. I.

ESTABLISHED 1855

John Eppler's Machine Works, 629 Filbert St., Phila., Penna.

Manufacturers of

Latest Improved Cop Machinery

of all kinds and

Upright Knitting Machinery for Millinery

Dress and Upholstery Trimmings

GRANT YARN CO.,

COMBED AND CARDED COTTON.

YARNS 40's and above. AND

FITCHBURG, MASS. **WARPS**

The Merwin Paper Company

Hartford, Conn.

Press Papers and Fender Boards

Correspondence Solicited

Mills at Rainbow, Conn. Address Inquiries to Rainbow, Conn.

22s	21
24s	21½
26s	22
30s	23
40s	28
50s	35

Southern high grade mule yarn:—

Cones.

10s	19½
12s	20
14s	20½
16s	21¼
18s	21¾
20s and 22s	22¼-22¾
24s	23¼

Southern frame yarn, lower grades:—

6s and 8s	16½
10s	17

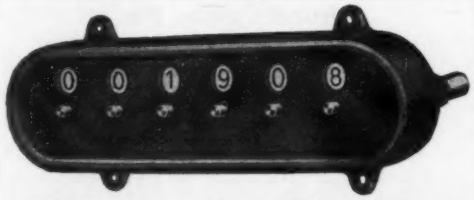
Eastern cones (high grade quality):—

10s	21
12s	21½
14s	22
16s	22¼
18s	23¼
20s and 22s	23¼-23¾

Skein yarn (mostly Southern):—

4s and 8s soft	16
10s and 12s	16½-17
14s to 20s	17-18
22s	18½
10/2	17
16/2	18
20/2	19
30/2	21½
40/2	27
8/3	16
7/6	16½

Pennsylvania, Philadelphia. Receiver Barrows of Gordon Bros. Co., manufacturers of haircloth on 200 looms in Frankford, reports that the plant will be run steadily for an indefinite period. Many orders for future delivery are being booked and all departments of the plant are running to their full capacity.



A Measuring Machine

that will register the output of each machine.

A glance tells how the machines are running —enables you to keep output up and cost down.

used by representative Cotton Mills and Bleacheries. Write for Catalog No. 18.

C. J. Root Co., Bristol, Conn.

JAMES E. MITCHELL CO., COMMISSION MERCHANTS

Cotton Yarns

122-124 Chestnut Street, PHILADELPHIA, PA.
Brown Building, 185 Summer Street, BOSTON, MASS.
25 South Tryon Street, CHARLOTTE, N. C.

CATLIN & CO.,

Cotton Yarns.

345 Broadway, NEW YORK.
67 Chauncy Street, BOSTON.
128-130 Chestnut Street, PHILADELPHIA.
605 Medinah Temple, CHICAGO.

William Whitman & Co.,

Commission Merchants

COTTON AND WORSTED YARNS

BOSTON. NEW YORK. PHILA. ATLANTA.
CHICAGO. BALTIMORE ST. LOUIS. CHARLOTTE.

A. D. Salkeld & Bro.

COMMISSION MERCHANTS

DEP'T FRED'K VIETOR & ACHELIS

Cotton and Worsted Yarns

366 Broadway cor. Franklin St., NEW YORK

Fred Sternberg & Co.

530 Broadway, - NEW YORK.

MERCERIZED TURKEY RED GASSED } **COTTON YARNS.**

LUDWIC LITTAUER,

SUCCESSOR TO
MOELLER & LITTAUER, 109 Greene St., New York

SILK, WORSTED, WOOLEN **YARNS** COTTON AND MOHAIR

Polished Threads and Tinsel. Artificial or Wood Silk. Mercerized, Turkey Red, Fine Gassed Yarns.

SILK MILL, BOONVILLE, N. Y.

SAVOGRAN

Cleans Wool, Floors, Anything.

INDIA ALKALI WORKS, Boston.

The Bradley Stencil Machine

Makes stencils in half a minute, at reduced cost of 1-10 cent each. Write for catalogue and price list.

In universal use by thousands of manufacturers and shippers.

Also manufacturers of **Oil** Stencil Board. Write for prices and samples.

S. T. Crocker, Pres. W. F. Stiles, Treas.

ORSWELL MILLS

Fitchburg, Mass.

Capacity, 45,000 Spindles.

HIGH GRADE YARNS

From Egyptian and Peeler Cottons, Carded or Combed, in Chains and Skeins, on Balls, Beams, Spools, Cops, Cones, Tubes, Single or Twisted.

Cotton Yarns

Jenckes Spinning Company
Pawtucket, R. I.

Carded and Combed single and twisted Yarns and Threads from Peeler, Sea Island and Egyptian Cottons, on Cops, Cones and Tubes or in Skeins and Warps. Six Cord Thread Yarns a Specialty **Bleached or in colors**

You Save Enough Insurance to Pay for the Equipment.

So it costs you NOTHING to have the AMERICAN WATCHMAN'S CLOCK. Fully approved by all insurance companies. We equip factories with Fire Alarms, Signals, etc., also Employee's Time Recorders, and Telephone Systems. Electric Time System consists of Master Regulator in office with secondary electric clocks throughout the mill, insuring accurate time. Send for particulars.

Pettes & Randall Co., 150 Nassau St., New York

T. H. S. CONE, Direct Selling Agent
COTTON YARNS
77 Worth Street, New York, N. Y.
Representing
Norwood Mfg. Co., Norwood, N. C.
Linn Mills Co., Landis, N. C.

Century Cotton Mills
Manufacturers of
Hosiery Yarns
Nos. 10s to 30s Sell Direct
South Boston - - - Virginia

Knitting and Weaving YARNS.

Cones, Cops, Warps, Skeins,
Single, Double, Three-Ply, etc.
Peeler, Egyptian, Mixed Colors.
Large Assortment.

EDWARD S. HYDE,
226 CHESTNUT STREET,
Philadelphia, Pa.

Authorized Capital **$100,000**
W. A. Dickel, Pres. and Treas.
Samuel Reid, Vice-Pres. and Sec'y.
I. B. Scovill Gen'l Mgr. and Supt.
INDUSTRIAL MILLS CO.
Jasper and Huntingdon Sts., Phila., Pa.
Manufacturers of
NARROW FABRICS
Special Attention Paid to Plain and Fancy
Spool Tapes and Stay Bindings.

F. W. MAURER & SONS CO.
MANUFACTURERS OF
Fringes, Tapes, Bindings, & Narrow Fabrics
Office and Factory: WAYNE AVE. and BRISTOL STS.
PHILADELPHIA

KROUT & FITE MANUFACTURING CO.,
Manufacturers of
Silk, Cotton and Mercerized Narrow Fabrics
SPOOL TAPES A SPECIALTY.
Telephone Connection. Office and Mill, Allegheny Ave. and Emerald St., PHILADELPHIA.

Pennsylvania, Philadelphia. The Peerless Co., dyers of skein silk yarns at Willard and Kensington Ave., have placed a contract for the erection of a new 5-story building adjoining their present plant. The dimensions of the building will be 50 by 90 ft. and it will cost $21,200. The mill will be used for tenement purposes.

*Pennsylvania, Philadelphia. A meeting of the creditors of Invincible Dye Works will be held on June 30, at the office of William J. Lawson, 212 Penn Square Bldg., for the selection of additional Assignee or Assignees if necessary, and other business will be considered.

Pennsylvania, Philadelphia. James T. Kerr, formerly employed as boss dyer by Adam White, at 1410 E. Oxford St., has leased the plant formerly operated by the latter party and is now running it on cotton and woolen skein yarns.

Pennsylvania, Philadelphia. William H. Baldwin, operating the Invincible Dye & Bleach Works at Trenton and Susquehanna Aves., dyer of hosiery in fast blacks and colors, has made a voluntary assignment for the benefit of his creditors and H. L. Williams has been appointed assignee. It is Mr. Williams' purpose to continue running the plant and indications are that within a very short time every dollar will be paid in full. All the creditors of the concern have signed a waiver not to put the concern into bankruptcy. The indebtedness of the concern amounts to about $7,500.

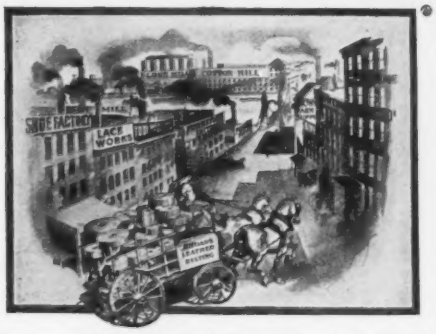
Pennsylvania, Philadelphia. The Brooklyn Hosiery Finishing Co. have equipped a plant for the finishing and printing of hosiery at 653 Morgan Ave., Brooklyn, N. Y. They are quite busy and are seeking help in other cities.

Pennsylvania, Pottstown. The Union Dye Works, Keim St. and the Reading R. R., it is reported have been sold to Otto Reim who will start the plant up on the dyeing of hosiery.

Pennsylvania, Topton. It is reported that the Hartley Silk Manufacturing Co., operating 200 looms on broad silks and piece dyes, are considering a proposition for increasing the size of their plant by the building of a new addition to their present mill.

*Rhode Island, Greenville. The name of the Greenville Woolen Mills has been changed to Stillwater Worsted Co. This property has been leased by Austin T. Levy as reported.

*Rhode Island, Manville. It is said that the Independent Cotton Mfg. Co. will lose no more time in getting to work on the construction of a mill. A meeting of stockholders is to be held shortly, in which a permanent set of officers will be elected.



Some of the many industries in which

Rhoads Leather Belting Helps

Its help is sought; because it gives such satisfactory results. Our method of preparing the leather produces a rare combination of strength, solidity and pliability. And we stretch it so that it stays stretched.

J. E. RHOADS & SONS,

PHILADELPHIA 12 N. Third St. CHICAGO 243 E. Randolph St. NEW YORK 40 Fulton St.

BOSTON: 105-111 Summer Street

Factory and Tannery, Wilmington, Delaware.

LINEN YARN IMPORTER.

HUGHES FAWCETT, 115 Franklin St., NEW YORK

Flax, Hemp and Jute Line and Tow Yarns, For Weaving Purposes.

Linen Jacquard Harness Twines, Fine Cotton Harness and Heddle Twines,

For Cotton, Silk, Woolen and Carpet Manufacturers.

Correspondence solicited. Samples promptly furnished.

DUNCAN & YOUNGS

95 Worth Street, NEW YORK

Practical Manufacturers of

YARNS, THREADS, TWINES, CORDS, ROPE

AND MILL SUPPLIES

Anything in the line you cannot get anywhere else apply to us.

William B. Charles,

Amsterdam, N. Y.

Cotton Yarns, Cotton Cloth, Silesia, Sateens,

For the Underwear Trade.

F. C. BARTON

65 Worth Street, New York

MANUFACTURERS OF

"LILY" BRAND NARROW FABRICS WEB, TAPE, BINDINGS, ETC.

THE BIAS NARROW FABRIC CO.

F. C. BARTON, President

65 Worth Street, New York

Bias and Straight Cut Fabrics and Ribbons.

Embossing and Cutting Customers Own Goods a Specialty.

Pocasset Worsted Company,

Worsted Yarns.

BOSTON
100 BOYLSTON STREET
TELEPHONE 19 OXFORD

NEW YORK
45 EAST 17TH STREET
UNION SQUARE

H. HODGSON, Pres. & Treas. FRED HODGSON, Gen. Mgr.

QUEENSBURY MILLS

Mohair, Lustre and Worsted Yarns

—Single and Two Ply—

Grey—Colors on Mixtures Worcester, Mass.

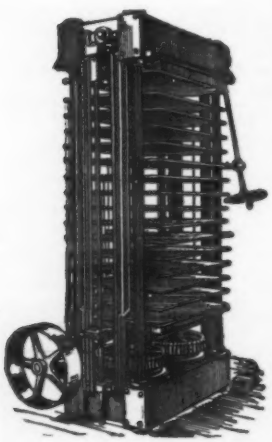
French System. Bradford System.

B. F. BOYER CO.,

MANUFACTURERS OF

WORSTED AND WOOLEN YARNS,

Office and Mill, River Ave. and Marlton St. CAMDEN, N. J.



Reliance Hot Plate Press

For Hosiery and Underwear Trade.

For price and particulars address

CHARLES HART
Hedge and Brown Sts.,
Frankford, Phila., Pa.

Woolen and Merino YARNS

Eaton Rapids Woolen Mills,
EATON RAPIDS, MICH.

Testing of Yarns

Count—Twist—Strength—Moisture
When in doubt apply to
U. S. Silk Conditioning Company
472-474 Broome St., New York

Lowell Crayons

Meet the requirements of any cotton, woolen or worsted mill.

May we send samples? 15 colors and white.

Lowell Crayon Co., Original Manufacturers Lowell, Mass.

Trade Mark on every box.

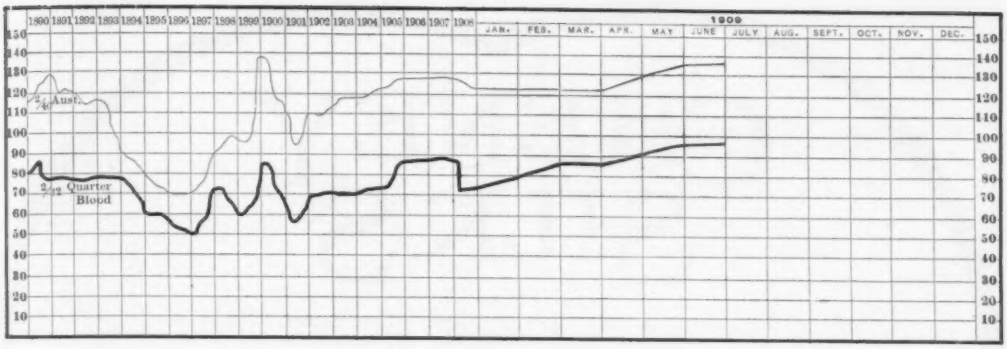


CHART SHOWING RANGES IN THE PRICE OF WOOL TO DATE.

The Woolen and Worsted Yarn Markets.

There has been practically no change in this market since our last report. Prices remain stiff and the spinners are very busy and immediate deliveries are hard to get. The advance in prices still continues. Bradford spinners making an increase of about 5 cents per pound on all numbers, ranging from 2/12 to 2/16 low common at 65 to 67 1/2 cents, up to 2/30 three-eighths blood at $1.08 flat. Single 24s worsted and 120s single cotton for raincloths have also been advanced from $1.20 to $1.27 per pound. French spun yarns in all numbers, with the exception of 1/30 high quarter and 1/30 three-eighths blood, which remain at the same price, have advanced about 3 cents per pound.

The men's wear weavers are very busy and are still working on fall goods. Spring lines have just been shown and mills are now getting ready to start up on this class of goods. Orders for yarns are being placed mostly for 2/36 and 2/40s, all for November delivery at prices ranging from $1.15 to $1.17 1/2 for 2/36s and from $1.22 to $1.27 1/2 for 2/40s.

The dress goods trade, which will not show its lines before July 4th, are beginning to ask for yarns in numbers ranging from 1/2 blood 32s at 97 1/2 cents and low numbers from single 10s to 28s, both white and mixed.

The spinners of woolen yarns report that a good demand is being made upon them from the knitting trade for yarns, especially for 2/20s in light and gray mixes and white and for some yarns in colors. Woolen spinners for the weaving trade, however, are not quite so active, but there are some orders coming in from this branch of the business. Spinners of woolen yarns for the knitting trade claim that they are well employed and have enough business on hand to keep them running to their fullest capacity until the end of the season, in fact they are now receiving more business than for some time back, due in a sense to the continuous rise in the price of worsted yarns, the knitter not being willing to pay the price and being compelled to go to the woolen spinner to get yarns as substitutes. Prices are firm and gradually advancing.

We quote as follows:

BRADFORD SPUN YARN.

2/12 to 2/16 low common	65-67½
2/12 to 2/20 1/4 blood	84-86
2/20 to 2/24 1/4 blood	90
2/26 to 2/28 1/4 blood	95
2/32 1/4 blood	97½-1.02½
2/20 3/8 blood	1.00
2/26 3/8 blood	1.07
2/30 3/8 blood	1.08
2/36 3/8 blood	1.10-1.12½
2/40 1/2 blood	1.25
2/40 delaine	1/30-1.32
2/50 delaine	1/35-1.37½
2/40 Australian	1.30
2/50 Australian	1.37½
2/60 Australian	1.50-1.52½
2/24 lustre	85
2/28 lustre	87½
2/30 and 3/32 lustre	85-87½
2/36 lustre	95-97½
1/24 worsted and 80s single cotton for raincloths	1.10
1/24 worsted and 120 single cotton for raincloths	1.27

FRENCH SPUN YARN.

1/20 1/4 blood	96
1/20 high 1/4	1.00
1/20 high 3/8 blood	1.07½-1.10
1/20 1/2 blood	1.15-1.17½
1/20 3/8 blood	1.03-1.05
1/30 high 1/4 blood	1.02½-1.05
1/30 3/8 blood	1.07½-1.10

CHENEY SILKS

All kinds of
Spun Silk Yarns in the Gray or Dyed. Organzines, Trams or Singles in the Gray or Dyed, on Cones, Warped or in the Hank.

16 Ounces to the Pound Pure Silk—Fast Colors Warranted

Special Yarns made to order for all sorts of Silks or Silk Mixture Goods, also special silks for electrical uses, insulation purposes, etc. Knitting Silks, Ribbons and Piece Goods for Trimming Knit Goods.

Dress Silks, Foulards, Sashes, Satins, Pongees, Plushes, Linings, Decorative Silks, Velvets, etc.

Manufacturers' orders promptly executed.

CHENEY BROTHERS, Silk Manufacturers
South MANCHESTER, Conn.
Salesrooms
NEW YORK, 477 Broome St. PHILADELPHIA, 929 Chestnut St.
CHICAGO, Heyworth Bldg. SAN FRANCISCO, Chronicle Bldg.
BOSTON, 79 Chauncy St.

WILLIAM RYLE & CO.,

Foreign and Domestic

Spun Silk Yarns and Noils.

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Importers of European and Asiatic Raw Silk.

54 Howard St., cor. Mercer St., NEW YORK.

SAUQUOIT SILK MFG. CO.,

INSULATING AND BRAIDING SILKS.

ORGANZINE, TRAM & HOSIERY SILKS.

Fast Dye Organzines for Woolen Manufacturers a Specialty.

Mills: Bethlehem, Pa., Phila., Pa., Scranton, Pa. New York Representatives, Wm. Ryle & Co., 54 Howard St.—Phila. Office, 4015 Clarissa St., Nicetown.—Chicago Office, 188-190 Market St.—Boston Office, 78 Chauncy St.

Crochet Lace Edgings

Spun Silk, Splicing Yarn, Mercerized Yarns, Cotton Warps, Sewing Threads, Tapes, Braids, Domets, Cambrics, Silesias.

Write for Prices and Samples.

George W. Chapin, 229-231 Church St., Philadelphia.

1/30 1/2 blood	1.17½
1/40 1/2 blood	1.20-1.22½
1/50 delaine	1.27½-1.30
1/40 Australian	1.42½
1/50 Australian	1.45
1/60 Australian	1.48
1/70 Australian	1.53

WOOLEN YARN.

	Wool	Cotton	
2/20 Light Grey Mixed	80%	20%	52
2/20 Light Grey Mixed	90%	10%	54
2/20 Light Grey All Wool			57
2/20 Colored All Wool			64
2/20 Bleached	80%	20%	65
2/20 Bleached	90%	10%	68
2/20 Bleached All Wool			70
2/25 Light Grey Mixed All Wool			75
2/25 Bleached All Wool			80

The Rag and Shoddy Market.

Business is quiet in this market as spinners are drawing on old stocks and have no need to replenish supplies, because of the small quantity of wool substitutes used in light weights. There is a more hopeful feeling as to the future and dealers express the belief that there will be a pronounced increase in the use of shoddy in heavy weights next season, because of the high price of wool and the return of the cheviot finish to favor.

Wool waste is in very limited supply and as a result sales are small.

We quote as follows:

SHODDIES AND EXTRACTS.

White yarn, best all wool	46-50
White knit, all wool, best fine	38-40
White knit, No. 2	32-38
Light yarn, extra fine	33-36
New pure indigo blue	30-32

Merino.

Fine light, all wool	28-31
Medium light, all wool	17-20
Fine black, all wool	27-29
Fine dark, all wool, best grade	21-23½
Medium dark, all wool, No. 2	17-18
Red knit stock, strictly all wool	21-24
Red flannel, all wool	25-27
Dark blue for hosiery, strictly all wool, No. 1	22-25
Dark blue for hosiery, not all wool, No. 2	17-20

WOOLEN RAGS.

Fine merchant tailors	9-10
Choice light colors	15-18
Browns	11-15
Blacks	10-13
Fine blues, plain	10-12
Fine dark	10-13
Medium dark	6-10

Worsteds.

Blue	15-17
Black	19½-20½

Do Your Dividends Go Up the Chimney?

Anyone can spend money and anyone can burn coal. It requires a combination of rare qualities to spend money to the best advantage, and a scientific knowledge of the principles of combustion to secure from coal the utmost efficiency in your fire room.

Good Coal and Good Boilers are Important but Good Fire-Room Practice is Essential.

Without it your power plant is a steady daily drain on your resources and dollars which should go for dividends are going up the chimney.

Hot Air Costs Money

Yet most boiler plants send into the stack ten tons of *excess* hot air for every ton of coal they burn.

Is Your Plant Doing This?

No matter what coal you are burning our fuel engineers can tell you

The proper grate to use
The best depth of fire
The most efficient draft

They can tell you exactly what your plant is doing, where the wastes are and how to cut them out. They bring to your service the experience acquired in hundreds of plants throughout the country. They can save money for you.

It will only take a minute to write for details.

ARTHUR D. LITTLE, Inc.

Laboratory of Engineering Chemistry
Fuel Engineering Department

93 Broad Street, - Boston

TRADE MARK REGISTERED IN
NON-FLUID OILS
UNITED STATES PATENT OFFICE

lasts six to eight weeks in comb-boxes of cards. Comb-boxes run much cooler and there is no spattering or dripping to injure card clothing or goods in drawing cans.

This same grade for general use in spinning and mule frames, etc., outlasts other lubricants, gives cleaner service and requires less attention.

Non-Fluid Oils are used with greater economy and cleanliness than fluid oils because they feed from oil cans one drop at a time instead of wasting in a stream.

Free sample upon request. Address Dept. H.

ORIGINATORS AND SOLE MANUFACTURERS

NEW YORK AND NEW JERSEY LUBRICANT COMPANY

165 Broadway, NEW YORK CITY

EDWIN F. SCHOFIELD

Cotton Waste

IMPORT and EXPORT

45 S. 3rd St. Philadelphia

William B. Charles,

Amsterdam, N. Y., U. S. A.

Cotton and Wool Wastes

COTTON YARNS

Contracts made with Cotton and Woolen Mills for Yearly Waste Production. Correspondence solicited. Shepperson's Code, 1878. Cable Address "Charles."

C. M. BLAISDELL, Pres. and Treas. G. A. BLAISDELL, Vice-Pres. and Sec'y.
Established 1860—Incorporated 1893.

THE S. BLAISDELL, JR., CO.,

COTTON, EGYPTIAN PERUVIAN

American Long Staple a Specialty. Shipments direct to mill from Egypt, Peru and all American Southern Points.

CHICOPEE, MASS.

Cotton Waste Purchased on Yearly Contract from Mills.

Serges.

Black	11½-12
Blue	14½-15½

Flannels.

New scarlet	18-20½
New blue	17-20
Cloakings	4-7

SOFTS AND KNIT STOCK.

Soft woolens, best	5½-7½
Old white flannels	12½-13½
Old red flannels	**12-13**
Old blue flannels	5-7
Old plaids	7-10
White stockings	20-23
White hood stock	20-24
Clear hoods	10½-12½

Dyestuffs and Chemicals.

Acids.

Acetic, 100 lbs.	2.27-2.35
Citric, domestic	38-50
Oxalic	6-7
Sulphuric, 66°, 100 lbs.	1.00-1.10
Muriatic, 18°	1.15-1.25
Tartaric crystals	26½-27½

Miscellaneous Chemicals and Dyestuffs.

Acetate of lime, gray, 100 lbs.	2.00-2.05
Alum, lump	1.75-1.85
ground	1.85-2.00
powdered	2.90-3.25
Aqua ammonia, 26°	3½-6½
Ammoniac sal, gray	
Borax, bbls.	4-8
Brimstone, crude, ton	27-51
Copperas	66-80
Cream tartar, crystals	21-25
Fuller's earth, powdered, ton	21-23
Glauber's salt	65-80
Potash, chlorate, crystals	9½-10½
powdered	12-14
carbonate	6-8
Soda, bicarbonate	1.60-1.75
Soda, caustic, domestic, 60 per cent.	1.77-1.90
Sal., American	72-86
Vitriol, blue	5-7
Acetate of soda	4-7
Acid, picric, best crystals	26-50
tannic, commercial	30-41
Albumen, egg	61-70
blood	25-33
Alizarine, red	19
Aniline, oil	10-13
salt crystals	14
Bichromate of potash, American	9-11
Bichromate of soda	8-11

J. LEE NICHOLSON, Pres. A. J. STERN, Vice Pres.

The American Cost Accounting Company

346 BROADWAY, NEW YORK

Best known Cost Specialists in the United States

Present condition analyzed and Defects corrected. Cost Systems Devised and Installed. Correspondence invited.

FIRE, LIGHTNING, WINDSTORM.

The HOME INSURANCE COMPANY NEW YORK

Organized 1853. MAIN OFFICES, 56 CEDAR ST.

Cash Capital, $3,000,000.

ASSETS January 1, 1909	$24,856,499
LIABILITIES (Including Capital)	14,173,678
RESERVE AS A CONFLAGRATION SURPLUS	800,000
NET SURPLUS OVER ALL LIABILITIES AND RESERVES	9,882,821
SURPLUS AS REGARDS POLICY-HOLDERS	13.682,821
Losses Paid Since Organization Over	$115,000,000

IDEMNITY
For loss of
Profits
Commissions
Use & Occupancy
on acceptable
Textile Plants
at the
Minimum Rate

IS prepared to entertain liberal lines on Sprinkler-Equipped and Modern Improved risks generally, having a special department for the consideration of such business.

ELBRIDGE G. SNOW, President.

EMANNEL H. A. CORREA, Vice-Pres.
FREDERICK C. BUSWELL, Vice-Pres.
CLARENCE A. LUDLUM, Asst. Sec'y.
AREUNAH M. BURTIS, Secretary.
CHARLES L. TYNER, Secretary.
HENRY J. FERRIS, Asst. Secretary.

Bisulphite of soda	3-5
Cutch, mat	5-8
Dextrine, imported potato	6½-8½
Divi-divi, ton	42-45

*Rhode Island, Norwich. In connection with the removal of the Westerly Silk Co., Westerly, R. I., to this city, the name of the company will be changed to Norwich Silk Co.

*Rhode Island, Pawtucket. It is stated that there is a prospect of an early enlargement to the Lorraine Mfg. Co., although it will perhaps not be more than one-tenth part as large as some of the reports which have been printed.

Rhode Island, Pawtucket. John Meehan advises that the change in his product to cotton-back satins is merely temporary, as the season for his regular silk and wool goods has been rather dull.

*Rhode Island, Providence. The new officers of the Queen Dyeing Co. are J. H. Wright, president, and F. S. Jerome, treasurer, both of whom are connected with the United States Finishing Co., owners of the Queen Dyeing Co.

*Rhode Island, Providence. Within the few weeks which have passed since the Continental Worsted Co. was organized to take over and operate the Blanding Mfg. Co.'s plant, the buildings and equipment have been put in first class manufacturing condition, and orders have been secured which make it necessary to operate the machinery on an over-time basis. Fancy worsteds for men's wear are woven on 40 looms and dyed and finished. The capital stock of the Continental Worsted Co. is $40,000. E. B. Carleton, Boston, is president, treasurer, and buyer; Charles A. Robinson is agent, and John Quinn is superintendent. The product is sold direct through the company's office in the Knickerbocker Bldg., New York.

Rhode Island, Providence. John Gormley has opened a sewing room at the corner of West Exchange St. and Brayton Ave., and is doing mending on a commission basis.

*Rhode Island, Valley Falls. N. W. Tilton has been elected president of the newly formed Tilton Mills, which took over the property of the Naushon Co. George C. Hinckley is vice president and treasurer, and Charles A. Morse, secretary.

Rhode Island, Valley Falls. The Naushon Co. has organized with H. R. Gillette, Cortlandt, New York, president; Stephen Hennessy, New York, vice president; I. P. Rounds, Pawtucket, treasurer; and Malcom G. Chase, secretary. The company will conduct a converting business, with main offices at Valley Falls, and a branch office at 66 Leonard St., New York City. As reported previously, the capital stock is $350,000.

Wisconsin, Waupun. The legislature has voted to repeal the law to establish a binder twine plant at the State Prison.

The WM. H. LORIMER'S SONS CO.,

Manufacturers of

MERCERIZED YARNS

FOR ALL PURPOSES.

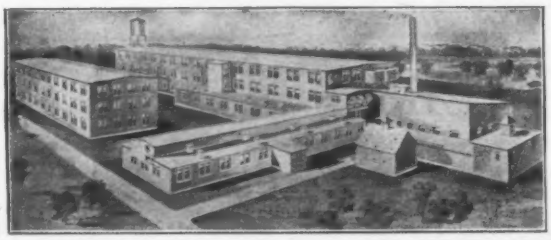
MERCERIZERS AND DYERS.

New York Office:
Room 911 New York Life Building,
346 Broadway.

Ontario and Lawrence Sts.,
PHILADELPHIA, PA.

PETER B. MCMANUS, Pres. and Treas. EDWARD J. MCCAUGHEY, Secy. and Mgr. JOHN MCMANUS, Vice-Pres.

HOME BLEACH AND DYE WORKS, Inc.



Dyers, Bleachers and Mercerizers of

Cotton Yarns

in skein, and long and short

CHAIN WARPS

Fast Colors a Specialty.

Daily Capacity 30,000 lbs.

Fast Colors and Black for Worsted Trade.

Office and Works, Pawtucket, R. I.

Established 1881.

GLOBE DYE WORKS CO.,

Successors to R. Greenwood & Bault

DYERS BLEACHERS AND **MERCERIZERS**

OF COTTON WARPS AND SKEIN YARNS

Globe Bleach and Dye Works,
Oxford and Worth Sts., Frankford, Pa.

140 Chestnut St., PHILADELPHIA.

JOHN F. DAVIDSON, Orianna Bleach Works

BLEACHER

Of Turkish Towels, Cotton Yarns, Underwear and Tapes

2558-2564 North 3d Street, 2557-2563 Orianna Street, PHILADELPHIA
Office, 2557 Orianna Street, Correspondence Solicited

THE PEERLESS COMPANY,

Willard and Jasper Sts., Philadelphia.

Dyers of Skein Silk

FOR ALL TEXTILE PURPOSES

Fast Colors on Silk for Worsted Manufacturers.

Pure Dye and Weighted. Bright and Souple.
Dyers of Peerless Black on Artificial Silk.

Pawtucket Dyeing and Bleaching Co.

Bleachers and Dyers of COTTON YARNS and STOCKINET

Office with Blodgett & Orswell Co., Manufacturers of Glazed Yarns.

232 Front St., Pawtucket, R. I.

RICHARDSON BROTHERS

51 AND 53 FRANKLIN STREET, NEW YORK

PAPER AND TWINE MERCHANTS

FOR FINISHERS OF TEXTILE FABRICS

"ROYAL" PRESS PAPERS

FIRTH & FOSTER CO.

Dyers and Finishers

York, Emerald and Adams Sts., Philadelphia, Pa.

New York Office, Silk Exchange Bldg., Cor. Broadway and Broome Sts.

Dyeing and Finishing of Piece Goods Exclusively, such as Wool Armures, Prunellas, Satins and Henriettas, Panamas, Poplins, Serges and Cheviots. Mohairs, Bradford Finish, in Fancy and Solid Colorings. Also Suitings and Cloakings.
Specialty in the Treating of Silk and Wool Fabrics, such as Eoliennes, Crepes and Henriettas and all high class wool tissues like Batiste, Voiles and Foules. Also, Cotton and Wool Goods, Mohair Linings and Lastings.

SPECIAL ATTENTION IS GIVEN TO THE REDYEING OF ABOVE

UTICA WILLOWVALE BLEACHING CO.

Sheetings, Shirtings, Lawns, India Linons. Everything in White Goods.

John MacManus, Superintendent.

CHADWICKS, N. Y.

The Western Thread Co.

COTTON AND MERCERIZED DYEING AND BLEACHING
CONE AND TUBE WINDING

21st Street and Marshall Boulevard, CHICAGO

E. B. BADGER & SONS CO.
Established 1841
COPPERSMITHS

STEAM JACKET KETTLES

Guaranteed to stand 150 lbs. cold-water test

Equal, if not Superior, to any in the market.

66 Pitts St.
BOSTON,
Mass.

It Attracts Universal Attention Because it Is THE BEST

BADGER'S
Fire Extinguisher

Has taken the lead in the United States, and is everywhere recognized for its efficiency. After competitive tests, lasting more than one week, THE UNITED STATES GOVERNMENT placed an order for 1,200 of

BADGER'S The Latest and Most Approved Automatic, Chemical, Hand Fire Extinguisher Made

Badger Fire Extinguisher Co.

42 Portland St., Boston, Mass., U.S.A.

THE SOLWAY DYEING & TEXTILE CO.,
PAWTUCKET, R. I.

Dyers, Bleachers and Mercerizers

of Cotton Yarns in Long or Short Chain Warps and Skein in FAST COLORS, for all purposes.

Also Dyers of Genuine Turkey Reds.

Dyers of all kinds of YARNS and HOSIERY

Woolen and Worsted yarns a specialty. Latest improved machinery for dyeing hosiery in Sulphur, Black, Tans and fancy colors. Better work and better service than you get elsewhere.

T. BROPHY'S SONS, Jasper St., above Clearfield St., - - PHILADELPHIA, PA.

ARABOL MANUFACTURING COMPANY,
100 William Street, New York.

Sizing, Stiffening, Softening and Finishing Compounds, Glues, Gums, Dextrines, Starches, China Clay, Bone Size and Grease, Soap, Tallow, Weighteners,

EVERYTHING IN SIZINGS, Etc. SAMPLES MATCHED. HIGH GRADE GOODS.

The Jamaica Dyewood and Chemical Co.

"RIO DE ORO" Brand Logwood Extract

Headquarters for Logwood—Crystals, Hermatine Paste
Fustic Crystals, Fustic Paste, Quebracho, Sumac

No. 50 Church Street - - - New York
Hudson Terminal Building

T. HOPKINSON, Prop'r and Mgr. G. W. HOPKINSON, Supt.

HOPKINSON DYEING & TEXTILE WORKS

Bleachers and Dyers of

Cotton Skein Yarns, Tie Bands, Twines, Braids and all Narrow Fabrics. Cone Winding or Tubing to Order

OFFICE AND WORKS

259 Forest Street, FALL RIVER, MASS.

DYE STICKS

Drying and Sulphur House Poles of Natural Round Water Grown Cedar for **Cotton, Wool, etc.** Special Hardwoods in Standard No. 1 and "Selects" without knots, grades, for **Silk Dyeing.** Manufactured by, prices and all information from

E. M. HAEDRICH,

601 Mariner and Merchant Bldg., ... Philadelphia

Aniline Colors
Alizarine Colors
Dyestuffs
Chemicals

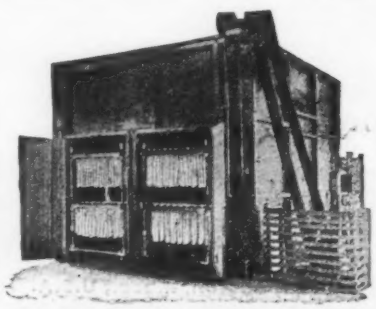
F. E. Atteaux & Co.

INCORPORATED

BOSTON, 176 Purchase St.

Branches:

Montreal Gloversville Chicago



Bailey's Hot Air System of Yarn Drying has no equal

where large capacity is required. Leaves the yarn in fine condition for winding and weaving, makes little waste, is simple and very effective. My *cold air system* is unequalled where output is not *the* all important thing.

Write for particulars.

Dye Sticks, Dye Poles, Wood Rolls, Fans and Trucks.

FRANK BAILEY, Manufacturer, Works at Braddock. P. O. Ad., Cedar Brook, Camden Co., N. J.

A. KLIPSTEIN & CO.

Dyestuffs and Chemicals

Fast Colors for Wool and Cotton.
Full Line of Direct Cotton Colors.

THIOPHENOL BLACK T EXTRA and 2 B EXTRA.
PYROGEN BLUE R . . .
PYROGEN INDIGO. . . . .

} Direct Sulphur Colors, Faster than Indigo, to light and Washing.

Chrome Fast Blacks, Blues, Browns and Yellows.
Acid Benzyl Blue, Violet Green and Black.

Headquarters for Caustic Potash 90%. Carbonate of Potash. Chlorate of Potash and Soda. Tannic Acid. Bleaching Powder.

122 Pearl Street, .. NEW YORK

BRANCHES

Boston Providence Philadelphia Chicago Hamilton and Montreal, Canada

SOLE AGENTS FOR

The Society of Chemical Industry, Basle, Switzerland.

THIOGENE COLORS

Sulphur Colors for cotton dyeing.

MONOCHROME COLORS

Fast one-dip mordant dyes.

RESIST COLORS

All shades

H. A. Metz & Co.,

122 Hudson Street, NEW YORK, N. Y.

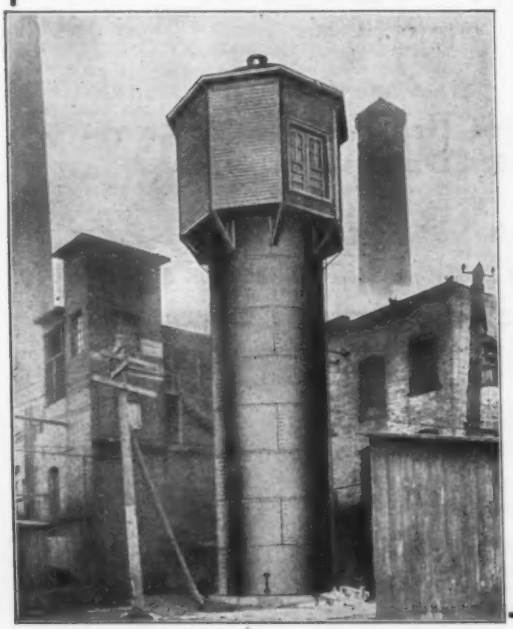
Boston, Mass.
Philadelphia, Pa.
Providence, R. I.

Charlotte, N. C.
Atlanta, Ga.
Chicago, Ill.
San Francisco, Cal.

Montreal, Canada
Toronto, Canada
Hamburg, Germany

Laboratories: NEWARK, N. J.

A Uniformly Softened Water is absolutely essential for Scouring, Bleaching, Dyeing and Boiler Feed



Our Water Softening System eliminates every possible objectionable feature in the water, and thus assures superior finish and appearance in your goods; at the same time giving you a greater efficiency in your boilers, in removing entirely all scale formation.

Each installation is built to meet all requirements.

No anticipated results—we know exactly what we can do for you, and base the payment upon the results guaranteed in advance.

Latest catalogue will be mailed on application.

You should read this book by all means.

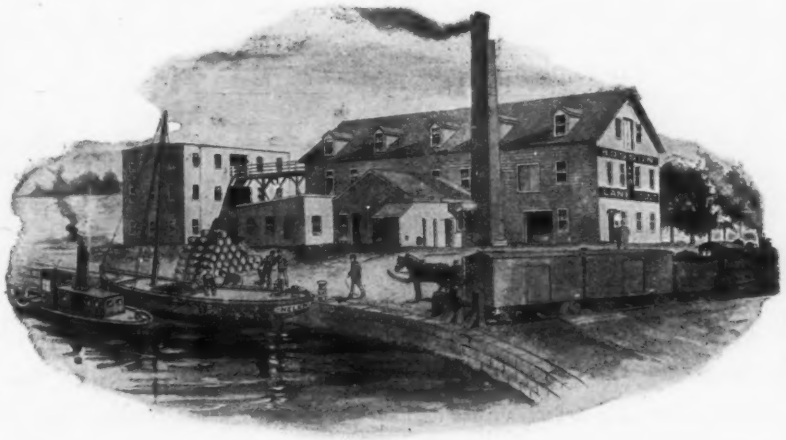
Northern Water Softener Co.

Manufacturers **Madison, Wis.**

Cassella
Color Company
Artificial
Dye Stuffs

NEW YORK
BOSTON
PHILADELPHIA
PROVIDENCE
ATLANTA
MONTREAL

Castor Oil our own make and Castor Oil Products. Unsurpassed in quality. They are the standards.



BOSSON & LANE,

MANUFACTURERS

ALIZARINE ASSISTANT
TURKEY RED OIL
SOLUBLE OILS
OLEINE

B. & L. ANTI-CHLORINE (ultra bleaching process)
OLO SOFFENE (superior cotton softener)
CASTOR SOAP OIL
SIZING AND FINISHING COMPOUNDS

Works and Main Office, ATLANTIC, MASS. (Suburb of Boston.)

Berlin Aniline Works

Main Office, 213-215 WATER ST., NEW YORK CITY

BRANCHES
Boston, Philadelphia, Chicago
Charlotte, Cincinnati

SPECIALTIES

Sulphur Blacks, Sulphur Blues, Sulphur Browns, Sulphur Greens, Sulphur Yellows, Indocyanines, Nerols
Metachrome Colors
Zambesi Black V and 2G

Manufacturers and Importers of

Aniline and Alizarine COLORS

FARBENFABRIKEN OF ELBERFELD CO.

IMPORTERS OF

Alizarine, Aniline Colors and Dyestuffs

117 Hudson Street, NEW YORK

BOSTON 32 India St.
PROVIDENCE 27 Pine St.
PHILADELPHIA 9-11 No. Water St.
CHICAGO 133 E. Kinzie St.
CHARLOTTE, N. C. 509-513 Trust Building
TORONTO, CANADA 14 Front St., East

Jersey City, N. J. Boston **THE SEYDEL MFG. CO.** Philadelphia Atlanta, Ga.

Sizing Compounds
Finishing Compounds
Soaps and Softeners
Bleaching Materials

SIZOL TRADE-MARK

Kemco Disinfectant
Kemco Disinfectant Powders
Kemco Disinfectant Soap
Textile Chemicals

KALLE & CO., Incorporated

Selling Agents for

ANILINE COLORS

Manufactured by

KALLE & CO., A. G., Biebrich-on-the-Rhine, Germany

Main Office, 530-36 Canal St., New York. Branches, Boston, Providence, Philadelphia, Greensboro, N. C.

Aniline Colors
Alizarine Colors
E. M. THAYER & CO.
411 Atlantic Avenue and 74 Purchase St., Boston, Mass.
Sulphide Colors
Extracts & Chemicals

C. Bischoff & Co.,

451-453 Washington St., NEW YORK.

BRANCHES:
229 N. Front St., Philadelphia.
124-126 Purchase St., Boston.
196 Michigan St., Chicago.
10 Weybosset St., Providence.
416 St. Paul St., Montreal.

PYROL COLORS FOR COTTON

of every shade and description, absolutely fast to sunlight, fulling, acids, etc.

Domingo Alizarine and Domingo Chrome Colors for Wool,

dyeing either after the one bath method absolutely fast, or on chrome bottom.

GEISENHEIMER & CO.

189 Front Street, NEW YORK.

Chemical Works Griesheim-Elektron.

Oehler Works

Branch Offices :
19 Pearl Street, Boston, Mass.
136 Chestnut Street, Phila., Pa.
Atlanta, Ga.

Aniline Salt and Oil, Aniline Colors.

TANS A SPECIALTY.

SULPHUR BLACKS, BLUES, BROWNS

CHEMICALS.

AUTOGENE BLACK BEE

Manufactured by

The St. Denis Dyestuff and Chemical Company, Ltd., PARIS, FRANCE

Originators of the Sulphur Color Industry

AS REGARDS SHADE, DURABILITY AND COST OF DYEING, THE BEST SULPHUR BLACK EVER PRODUCED

SAMPLES AND FULL PARTICULARS FROM

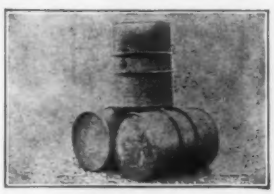
Walter F. Sykes & Co., Sole U. S. Agents

Boston—113 Broad Street. New York—83 Water Street. Philadelphia—132 Chestnut Street

"SOLVAY"

CALCIUM CHLORIDE

Used by the largest Cotton Mills, Print Goods Mfgrs. and Sizing Makers.



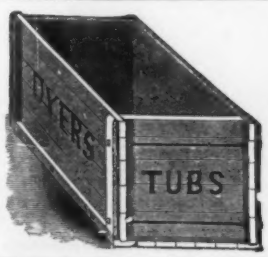
Granulated

Liquid

Carbondale Calcium Company

General Sales Agents

Carbondale, Pa.



AMOS H. HALL, SON & CO.,

Established 1868.

Cedar Vats and Tanks

Tubs and Tanks of all kinds for Dyers, Bleachers, Factories, etc.

2915-2933 North Second St., PHILADELPHIA, PA.

Down Town Office, 140 Chestnut St., Corner Second.
Hours from 12 to 1

IF

you size or finish your goods,

IF

you strip your goods,

DIASTAFOR

can show

ADVANTAGES

from standpoint of economy as well as quality of fabric.

The American Diamalt Co.

Riverside, - - - Cincinnati, Ohio
Room 87 Essex Bld., opp. South Sta., Boston
1091 Drexel Bld., - - Philadelphia

TANKS and VATS

Cedar, Cypress and Pine

For Dyers, Bleachers, Tanneries and General Factory Purposes.

Reservoir Tanks
Sprinkler Tanks
Special Tubs and Vats

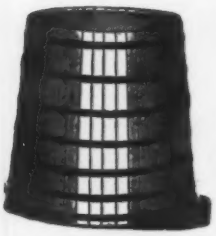
Steel Towers

For Elevating Tanks to any Height.

New England Tank and Tower Co.
112 High Street, Boston, Mass.

G. WOOLFORD WOOD TANK MANUFACTURING CO.

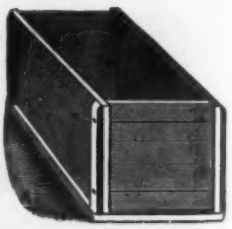
MANUFACTURERS OF



CEDAR AND CYPRESS
TANKS AND VATS

For Bleaching, Dyeing and Finishing.

Reservoir Tanks of any Capacity or Shape for Sprinkler Systems and all purposes.



Office 1429 Chestnut St., Philadelphia, Pa.

TANKS

All sizes all shapes.

Built to Last

LARGE TANK WORK A SPECIALTY

Send for catalog. Established 1849.

The A. T. Stearns Lumber Co., Boston

Advice on

PEROXIDE BLEACHING

free to mills

The Roessler & Hasslacher Chemical Co.

New York

SUMAC AND QUERCITRON EXTRACTS AND FLAVINE

INSISTING UPON YOUNG'S EXTRACTS

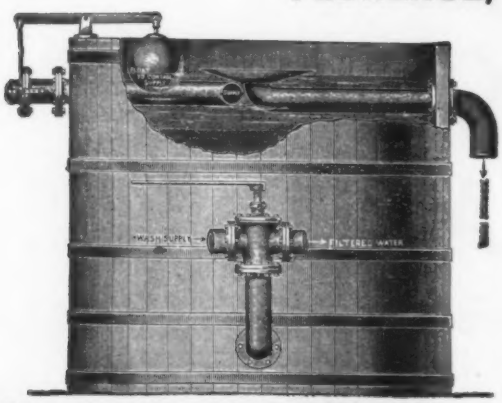
Means that you are GUARANTEEING for yourselves

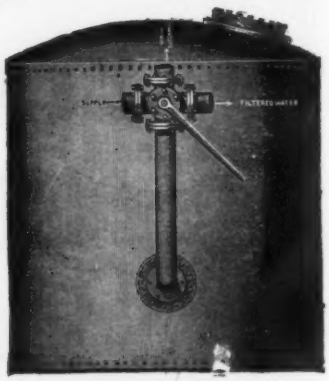
PURITY, STRENGTH, AND UNIFORMITY

J. S. YOUNG & CO., Ltd., Hanover, Pa.

NORWOOD ENGINEERING COMPANY,

FLORENCE, MASS.





WILSON FILTERS FIRE HYDRANTS

Our filters are already in use in a number of the representative textile mills of the country, from whom we have received many expressions of satisfaction. Our representative will call and explain our system whenever desired.

FILTERS AND WATER SOFTENERS

Hungerford Filters having a daily aggregate capacity of over thirty million gallons per day are now in operation in the textile mills of America.

Estimates and plans for proposed installations submitted without cost.

HUNGERFORD & TERRY, Inc.,

PENNA. BLDG., PHILADELPHIA, PA.

THE CYPRESS LUMBER CO.

MANUFACTURERS OF

TANKS

OF ALL KINDS

Factories at
Apalachicola, Fla.
and
Boston, Mass.

Established 1796

Special shaped carbon, black diamond, pointed tools for turning paper, rag, corn husk and cotton calender rolls, hard rubber, fibre, etc. Manufactured by

Thos. L. Dickinson, Successor to John Dickinson, 64 Nassau St. New York City.

The Pneumatic Conveyor

For handling wool and cotton stock, rags, excelsior, jute and all kinds of fibrous material, wet or dry. Also spool elevators, steam heating and ventilating, and mill work generally. Blower and fan work a specialty.

Beware of infringement.
Patentee and sole manufacturer

CHARLES H. SCHNITZLER, GUARANTEED
215 North Second Street, **PHILADELPHIA, PA.**

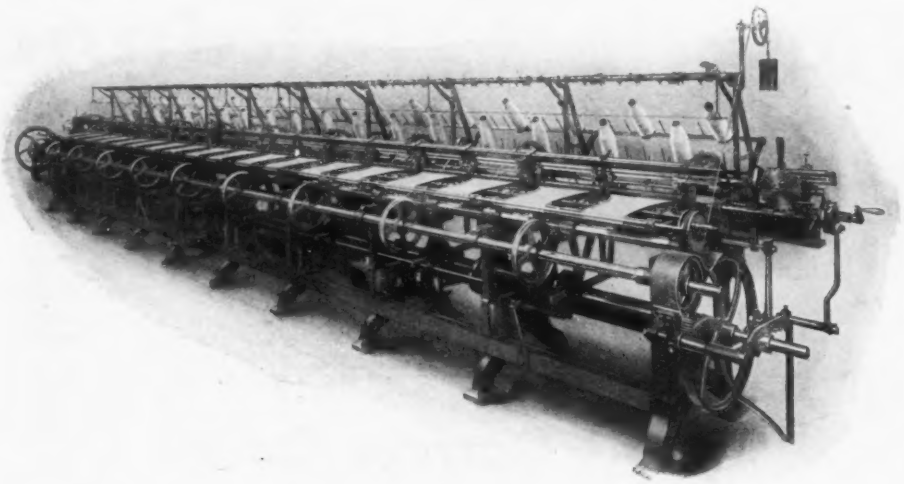
Full Fashioned Hosiery Machines

BUILT BY

SCHUBERT & SALZER

CHEMNITZ, GERMANY

Largest Manufacturers of all Classes of Hosiery Machines



Best constructed and most productive machines in the market for the manufacture of Full-Fashioned Hosiery in Cotton, Lisle or Silk in all gauges, from 14 to 32 needles to the inch, from 12 to 24 sections.

Split-Sole, Plaiting, 2, 3 or 4 Color Striping
Single or Double Lace Attachment.

Also: New Jacquard Lace Hosiery Machines.
Ribframes Winders

REFERENCES:—All the leading manufacturers of full-fashioned hosiery in this country.

AMERICAN REPRESENTATIVE:

OTTO WALTHER, 507 Bourse, Philadelphia

FRIEDBERGER-AARON MFG. CO.

LEADING MANUFACTURERS

Braids and Edgings

FOR TRIMMING

Ladies' Ribbed Underwear

OUR MOTTO:

Correct Goods
Right Prices
Prompt Deliveries

Mills: Germantown, Philadelphia

Post Office Address,
Logan Station, Philadelphia

THE GROSSER KNITTING MACHINE CO.

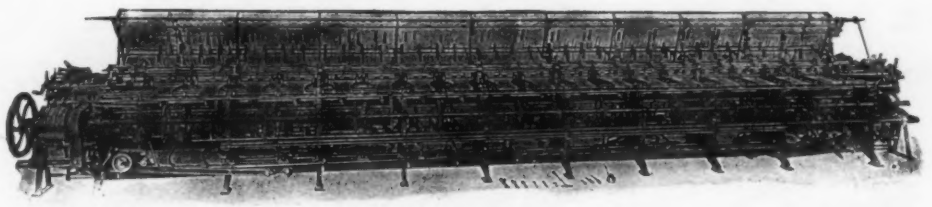
MAX NYDEGGER

Wool Exchange, 260 W. Broadway, New York.

All Special Machines for Any Article That Is Knit

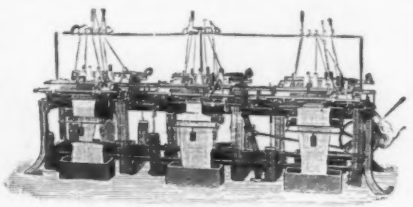
Full Fashioned Hosiery Machines

System **G. Hilscher, Chemnitz, Saxony**



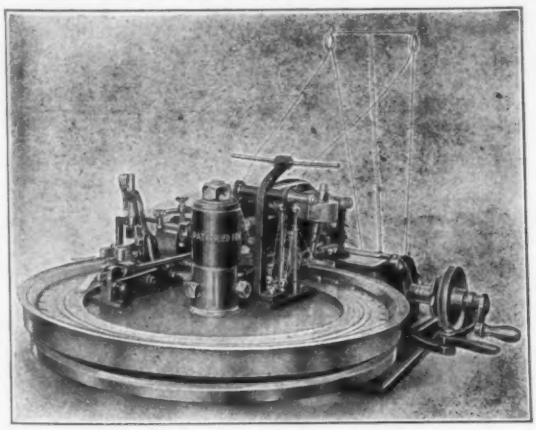
18 Section "COTTON HILSCHER" Machine for Full Fashioned Hosiery, Silk, Cotton, Wool, etc.
Gold Medal, Paris, 1900 Numerous Patents Covering Special Improvements

GROSSER Flat Knitting Machines
For HAND Power or FULLY AUTOMATIC Power MACHINES. Most productive and best machines for Sweaters, Jackets, Blouses, Wool Hosiery, Gloves, Mittens, Sporting Goods in Plain, Fancy and Jacquard Work, Shaker Articles, etc. Large stock on hand. Power Machines to be seen in operation.



CIRCULAR FRENCH FRAMES
C. Terrot Söhne, Cannstatt, Würt, famous builders of the best Circular Frame for Finest Underwear, Fleece Linings, Gloves, Special á-jour (openwork) Fabrics, etc.

RASHEL MACHINES [Double Rip Warp Knitting Machines.]
For Fancy Goods in largest variety, Shawls, Capes, Caps, Borders, Fringes, Lace Work, etc., in silk, wool cotton.



The LOOPER THAT LOOPS!
Two thread lock stitch machine with reliable trimmer and raveller producing *indistructible, flat elastic* seam.
No Hosiery or Underwear plant up to date without this machine.

DIAMOND OVERSEAMERS
for all classes of selvege goods, Full Fashioned Hosiery, Underwear, etc.

FINISHING MACHINES for Knit Goods of all styles.

WINDERS for finest yarns.

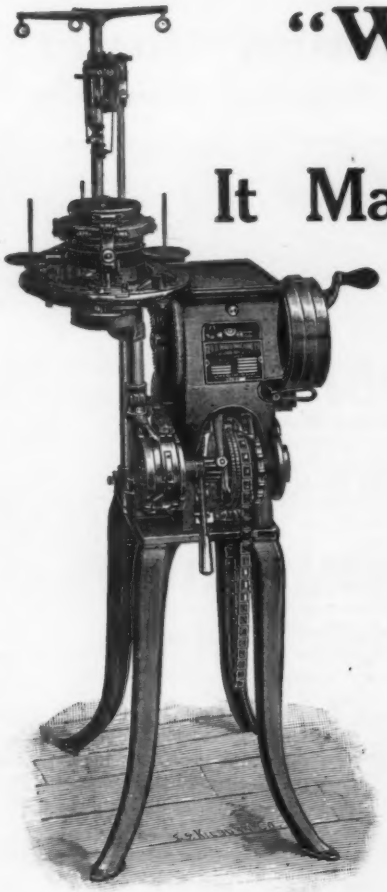
Information, Samples and Specifications at Your Disposition

OVER 1000 SOLD

In Three Months

This is the Record from Dec. 1st, '08 to Feb'y 28, '09 of

Mayo's 1909 Model Full Automatic Knitter



"WHY?"

because

It Makes Good

on its claims, viz:

Largest Production

Lowest Cost

Simplest Mechanism

Best Construction

For particulars write to

GEO. D. MAYO MACHINE CO.

GEO. D. MAYO, Pres. and Gen. Mgr.

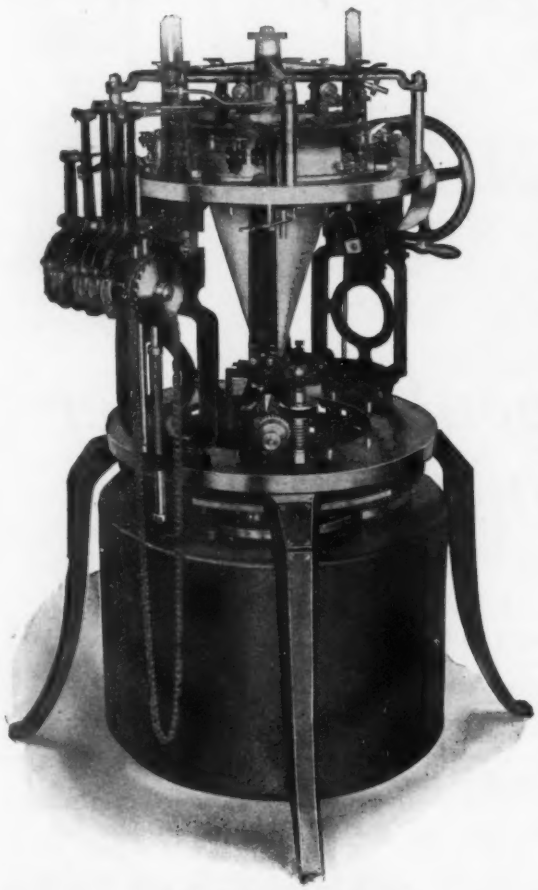
Laconia, N. H.

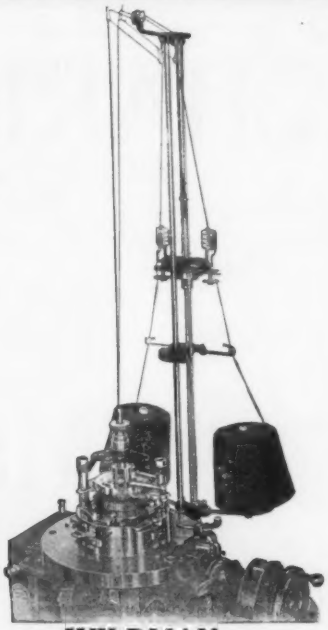
Philadelphia Showroom, Knickerbocker Bldg., 6th and Arch Streets

Wildman Mfg. Co.

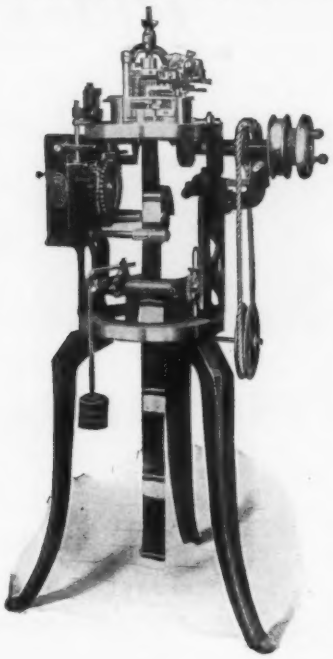
MANUFACTURERS OF

Circular Rib Knitting Machinery
AUTOMATIC STOP MOTIONS
ELECTRIC CLOTH CUTTERS





WILDMAN
Chainless RIBBERS for Hosiery
With Automatic Attachments for Striping, Splicing, Selvage Welt and a TWO-SPEED DRIVE
To Increase and Improve the Product
WILDMAN AUTOMATIC STOP MOTIONS



WILDMAN
Plain and Automatic Machines
For Underwear, Union Suits, Sweater Coats, Knitted Skirts, etc.
Established Reputation for Large Production, Quality of Fabric, Durability and Economy of Operation.
Illustrated Descriptive Catalogue.

NORRISTOWN, PA.

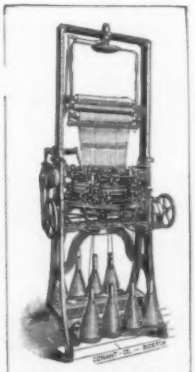
CHARLES COOPER

BENNINGTON, VERMONT.

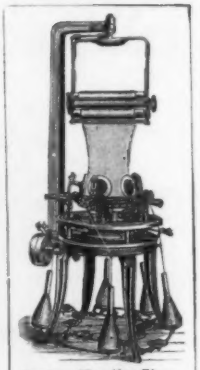
MANUFACTURER OF

Knitting Machinery

Flat and Circular Rib, both Spring and Latch Needle, Plain Circular Machines, Lead or Trick Cylinder.



Circular Spring Needle Rib Top Machine.



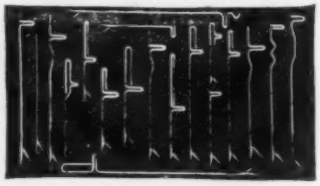
Spring Needle Circular Plain Body Machine.

Spring Needle Cylinder Rib-Top Machines

For making Cuffs, Drawer Bottoms and Shirt Borders.

Spring Needles.

Spring and Latch Knitting Needles, Burr Wheels, Burr Blades, Sinkers, Jacks, Etc.



Latch Needles.

COLLARETTE ATTACHMENT.

AMERICAN REPRESENTATIVE.

G. H. ROGERS,
509 Clinton St., Hudson, N. Y.

EUROPEAN REPRESENTATIVE.

FELIX LEDERER.
Ix/4 Schubertgasse, Nr. 22, Vienna, Austria.

Higher Speed

To Reduce Cost of Production by Increasing Output of Operators

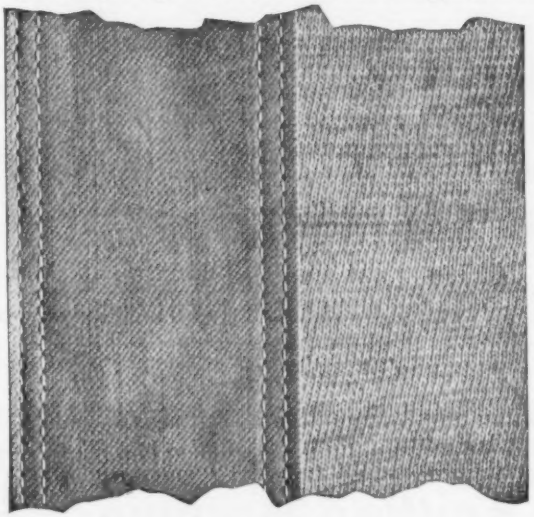
Higher Efficiency

USE

Multiple Needle Machines

For all Multiple Needle Operations, whether for Ornament or for Service, where it is desired to have a plurality of parallel rows of stitching, needles spaced as desired

Yielding Bottom Presser Foot to be used where different thicknesses of Fabric are being Stitched Simultaneously



Special Fittings and Attachments now ready for Numerous Manifold Operations

Greater Simplicity

Style 16100 A-4 Needles-8-80-8 Gauge
Stitching Front Facings to Shirts
One Operation

Greater Durability

Union Special Machine Company

BRANCHES
96 South St., Boston, Mass.
50 E. Main St., Amsterdam, N. Y.
51 Mohawk St., Cohoes, N. Y.
776 St. Catherine St., W., Montreal, Can.

HOME OFFICE AND WORKS
75 E. Kinzie St., Chicago, Ill.

GENERAL EASTERN OFFICE
47 Leonard St., New York City

BRANCHES
731 Arch St., Philadelphia, Pa.
806 Main St., Cincinnati, Ohio
1507 Olive St., St. Louis, Mo.
684 Mission St., San Francisco

NEW ENGLAND BUTT COMPANY,

304 PEARL ST., PROVIDENCE, R. I.

BRAIDING MACHINERY

ALL STYLES AND KINDS FOR FLAT AND ROUND BRAIDS.

SOLID SASH AND CURTAIN CORDS,

SHOE AND CORSET LACES, BANDING

AND ALL BRAIDED FABRICS.

EXCELSIOR KNITTING MACHINE MFG. CO.

Meadow and Washington Streets

ALLENTOWN, PENNA.

BUILDERS OF

Full Automatic Knitters

With or without **Transferring Device**

ALL SIZES AND GAUGES, 2 1-4 INCH TO 4 INCH

Circular Knitting Machine

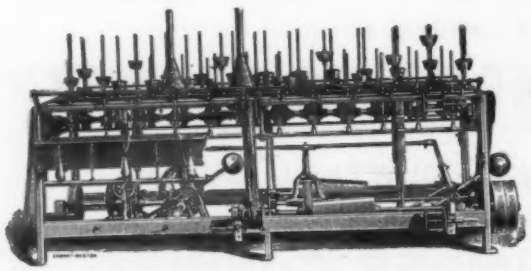
Plain or Full Automatic

with stop motions complete.

4 to 24 Feeds

FOR RIBBED UNDERWEAR

Automatic Racking and Striping Machines for Sweaters, Cardigans, Collarettes, Cuffs and Anklets.



THE WELL KNOWN

ABEL WINDERS, SEAMERS and LOOPERS

ARE ALSO BUILT BY US

LEIGHTON MACHINE CO., Manchester, N. H.

James Taylor, 121 Arch Street, Phila., Pa.

DEALER IN NEW AND SECOND HAND

Knitting Machinery

Wishes to call the attention of the manufacturers of Ribbed Hosiery and Underwear to the new patented

Double Acting Attachments for Ribbers

sold on its merits only. Here are a few of its MERITS:

Double Production; as it is double acting; fills your orders in half the time or more orders in the same time; you produce in six months what it now takes you one year to do; does the work of two machines.

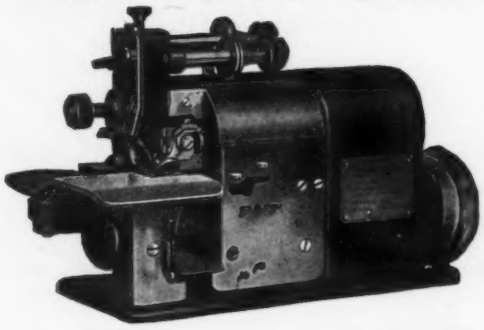
Costs Less; requires just half the space, that means less rent or investment; weigh or measure the product, then compare with present methods; makes a good RIBBER better. New parts all built on the interchangeable PLAN. We are changing over either WILDMAN, BRINTON or SCOTT & WILLIAMS MAKES of machines.

Call and see machines on exhibition at 121 Arch St., Phila.

The Merrow

High Speed Overseaming, Overedging and Scallop Stitch Machines are

FAST
DURABLE
Light Running



OUR STYLE 60 MACHINE for Trimming and Overseaming in one Operation produces the strongest, best Seam and does it with the greatest economy.

USE STYLE 18 for Horse Blankets. STYLE 17 or 22 for Bed Blankets. STYLE 35 B SHELL, for Necks and Fronts of Rib Goods, produces the most showy, substantial finish.

Send for Catalogue and Samples.

THE MERROW MACHINE CO. HARTFORD, CONN.

Knickerbocker Building, Sixth and Arch Sts., Phila. 467 Broadway, cor. Grand St., N.Y. 237 Market St., Chicago, Ill.

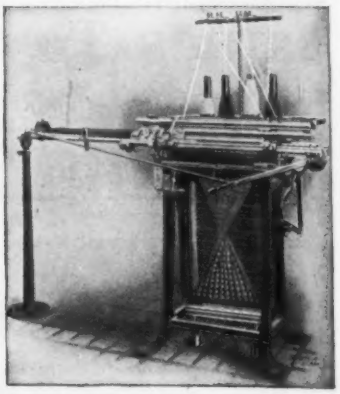
Edouard Dubied & Co.,

Couvet, Switzerland,

Leading Manufacturers of

Flat Knitting Machines

For Hand and Power
Full Automatic, Etc.



Best constructed and most productive machines on the market for manufacturing sweaters, gloves, sporting goods, etc.

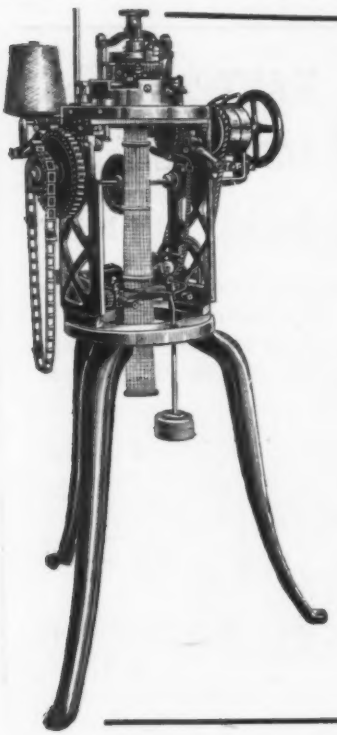
Acknowledged by experts, users and judges to be

"THE BEST"

Machines can be seen in operation by appointment. *For particulars apply to*

E. O. SPINDLER, Agent,

350 Broadway **Room 515** **NEW YORK, N. Y.**



Expense-Reducing

Knitting Machinery

FOR

Hosiery, Underwear, Sweaters, Toques, etc.

You can economize on production costs by using our

Improved Automatic Ribber

AND

Full Automatic Knitter

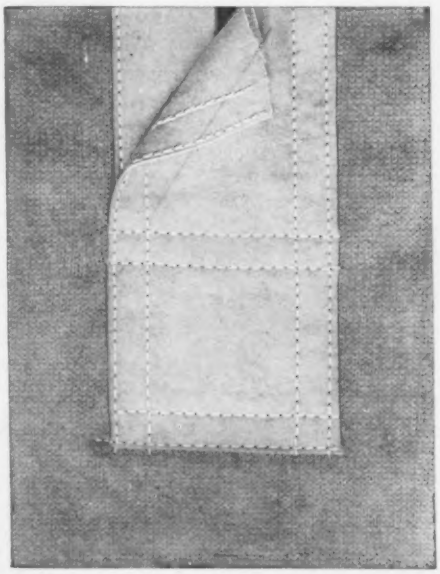
Estimates Furnished for Complete Equipments
Send for Particulars.

H. Brinton Co.

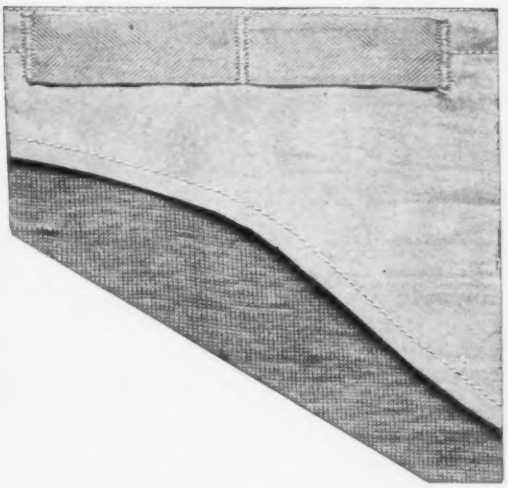
213-215 Race St., Philadelphia, Pa.

Singer Machines for Knit Goods

SINGER MACHINE No. 19-W-3, FOR EYELETS, makes a plain Radial Stitch from 3/32 to 1/4 of an inch, inside diameter. The operator stops the machine at his option, there being no automatic stop motion.



SINGER MACHINE No. 52-32, has four needles and four hooks for buttonhole facings; folds the raw edging of facing and lining and stitches same upon knit undershirts in one operation. Needles gauged $\frac{3}{16}''$-$1\frac{1}{8}''$-$\frac{3}{16}''$ apart, unless otherwise specified.



SINGER MACHINE No. 79-1, FOR TACKING DRAWER STRAPS, is adjustable for making the bar tack from $\frac{1}{2}$ to $\frac{7}{8}$ of an inch long and $\frac{1}{16}$ to $\frac{3}{16}$ of an inch wide, the last two stitches fastening the thread and the automatic cutters trimming it close to the tack, both top and bottom.

Free Samples of Work Furnished on Application

Singer Sewing Machine Co.,

Room 3613 **Singer Building, New York**

SPARTAN BELTING GUARANTEE

"We guarantee that Spartan Belting will withstand exposure to either hot or cold air, water-steam-oil-gases-and heat generated by excessive pulley friction:

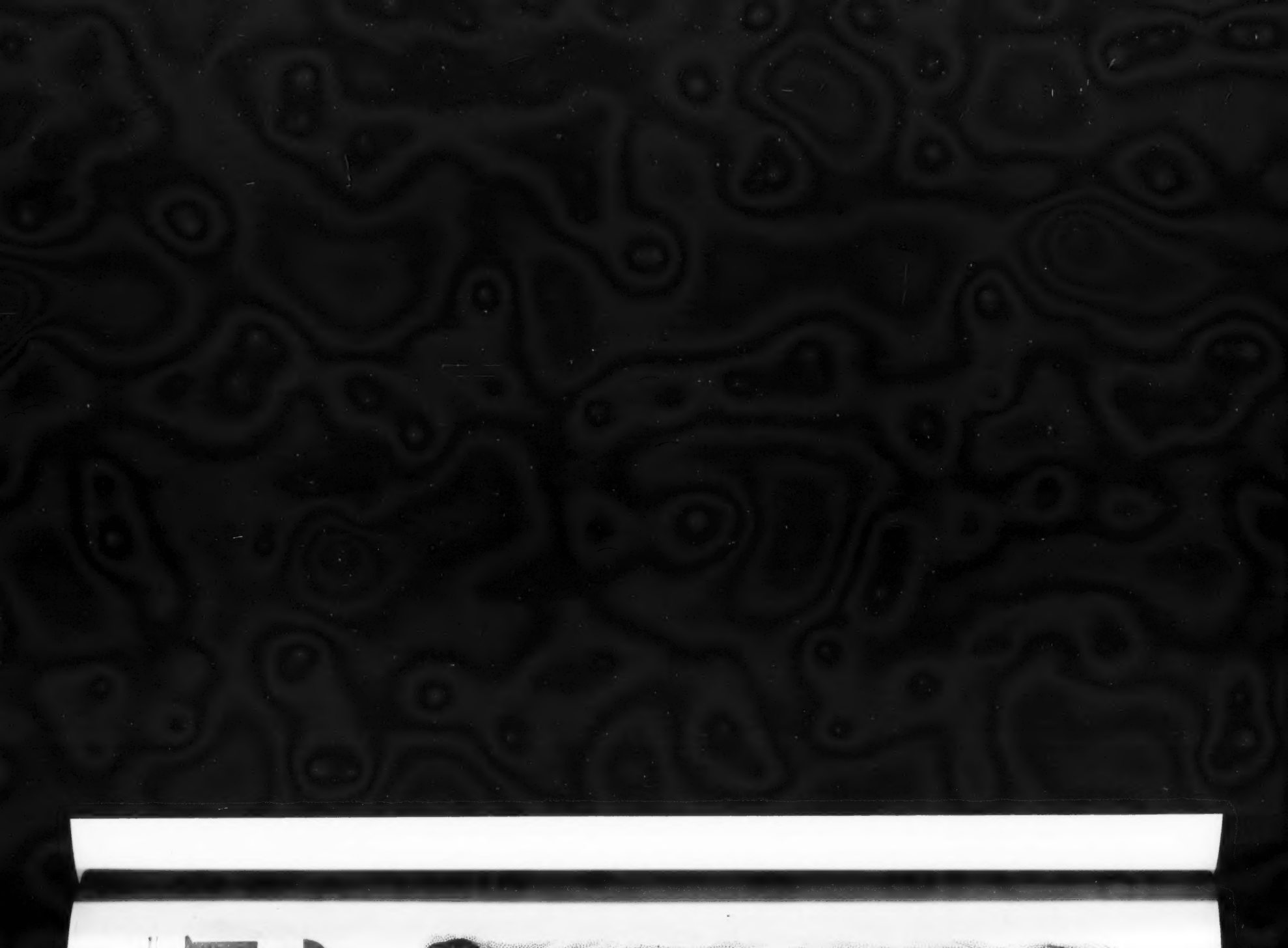
That owing to its unusual pliability it will grip the pulley better-run with less tension and reduce the friction load:

That under proper mechanical conditions it will transmit power with greater economy than any other material in use, thereby reducing the cost of power transmission:

That it will, when used under the same conditions outwear any other belting material, saving loss of time and cost of replacement.

We, further, guarantee that if any Belt should prove defective by reason of fault in material or workmanship, we will furnish a new belt, or repair the defective part."

GRATON & KNIGHT
M'F'G. CO.
WORCESTER MASS.



NYE & TREDICK CO.

718-720 Cherry Street,
PHILADELPHIA, PA.

Circular Rib Knitting MACHINERY

For making Ribbed Underwear, Combination Suits, Sweaters, Cuffs, Shirt Borders, Hosiery, etc. Correct Construction, Excellence and Durability.

LATEST IMPROVEMENTS

QUALITY OF FABRICS AND PRODUCTION

UNEXCELLED

NYE & TREDICK CO.

"Nothing so Good as a Good Finish"

We are speaking of the finish on Knit Goods as produced by the

Hoffman Press

Presses a full garment in one operation, leaving it smooth and of fine finish.

Will not break buttons.

Floor space required—4 feet square.

The "Hoff-Man" F.

Write us for prices, particulars and illustrated catalogue

United States Hoffman Company

229 Temple Street

SYRACUSE, N. Y.

The Invincible

Full Automatic.

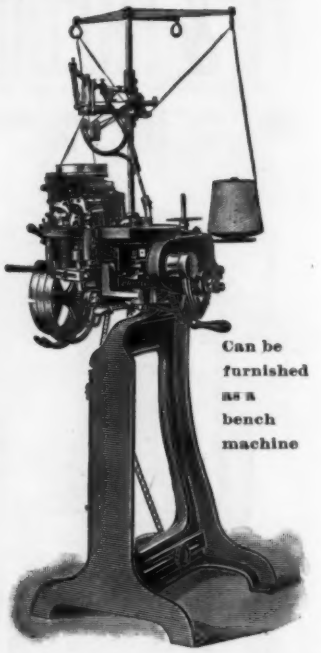
"The KNITTER that KNITS"

THE LARGEST PRODUCER OF PERFECT WORK.
SIMPLE, POSITIVE AND EASY TO OPERATE.

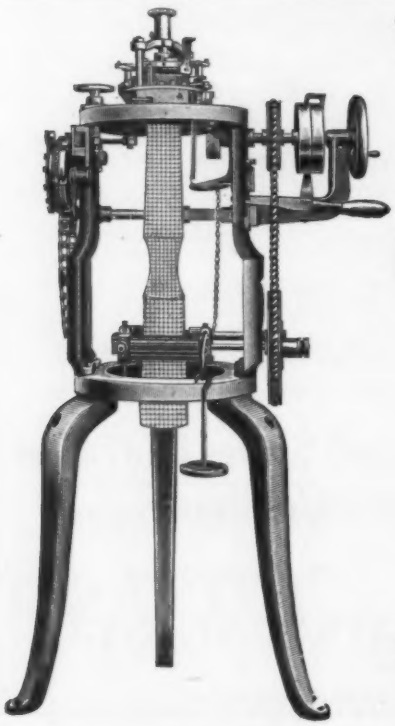
E. JENCKES MFG. CO.

Pawtucket, R. I.

PHILADELPHIA OFFICE,
101 North Sixth St.



Can be furnished as a bench machine



You Will Increase Output

and

Decrease Your Expenses

By Using Our High Speed

Rib Knitting Machinery

Our latest models will cause fewer seconds, less breakage of needles, less jar, wear and tear, than machinery designed for lower speed.

While effecting this saving, it decreases your production cost and so increases your profit.

The same economies result from the use of our Stripping and Designing Machines for Fancy Golf Stockings, Bathing Suits, Sweaters, Toques, Toboggan Caps, Skirts, etc.

STAFFORD & HOLT,

LITTLE FALLS, N. Y.

RAVLWIND

(TRADE MARK)

This 20th Century Wonder

Created a furor at the exhibition of the National Association of HOSIERY and UNDERWEAR MANUFACTURERS held in Philadelphia, May 10-15.

GREAT COMMENDATION FROM

Hosiery Manufacturers

Who saw it in operation

It automatically unravels and winds the yarn of the loopers' course after the fabric has been placed upon the points of the looper at its proper course. It can be attached to the cap or head of any standard looper.

In some cases the "Ravlwind" will increase production as much as 40%—and save $2.00 to $3.00 a week on each looping machine.

Send for full details

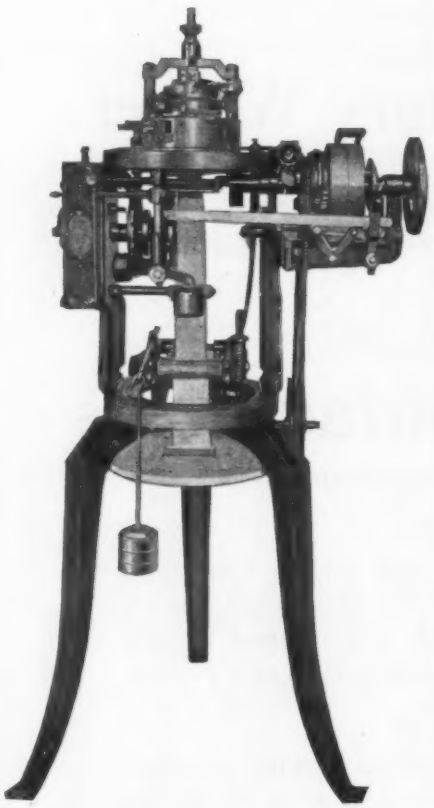
Arguto Oilless Bearing Co.

Wayne Junction, Phila., Pa.

INCREASE IN PRODUCTION

Of 30 to 60%

BY USING THE



Climax High Speed Automatic Attachment for any make of Circular Rib Knitting Machines.

Flat Knitting Machines

equipped with the improved

CLIMAX POWER MOTION
AUTOMATIC TAKE UP
AUTOMATIC Rracking
METAL STAND

CLIMAX MACHINE CO.,

1753 N. Howard St., Phila., Pa.

GENERAL MACHINE WORKS

YORK, PA.

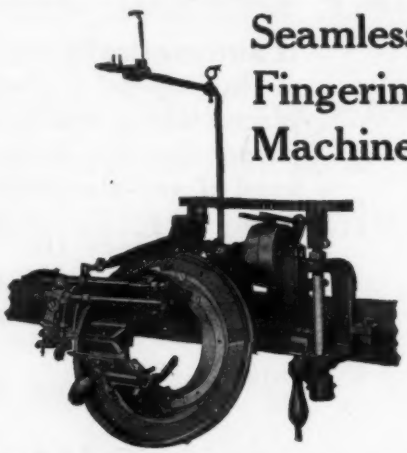
Manufacturers of

Ribbers

for Hosiery, Underwear and Gloves. Splicers and Sleevers

We carry a large stock of needles and can supply your wants promptly. We are prepared to cut cylinders and dials promptly and accurately. We develop and market new ideas for any one. Your inquiries will be appreciated.

Seamless Fingering Machine



Knit Glove Manufacturers

If you want to be up to date, ask us for particulars of this machine. Indorsed by leading manufacturers.

James Leckie & Son,

821 N 13th Street, Phila, Pa.

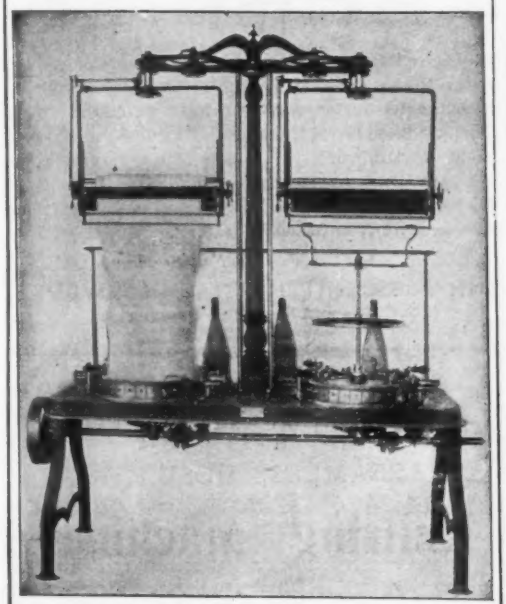
Established 1870. — Incorporated 1890.

CRANE M'F'G. CO.

LAKEPORT, N. H.

Manufacturers of

Spring and Latch Needle Machines for both rib and plain work, producing a great variety of fabrics. Patent removable hardened Wing Burr Wheels.



Spring Needle Underwear Machine.

CASE BROTHERS

INCORPORATED

Highland Park, Conn.

Manufacturers of

RAG PRESS BOARDS

Especially Adapted to

Hot Pressing

Also

Fender Boards

Medals awarded at Paris and Melbourne Expositions.

Jacquard Cards

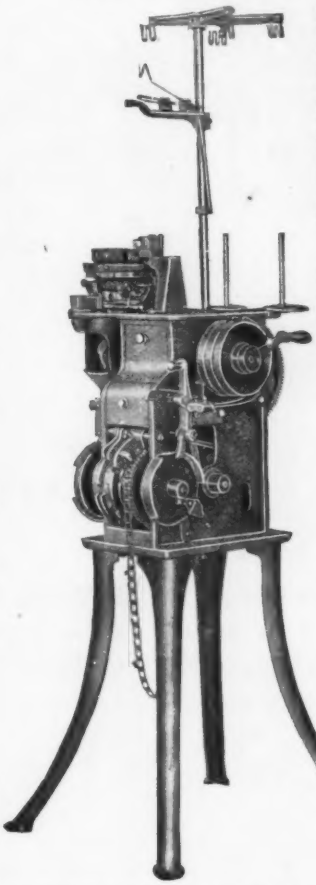
of all Grades for Fancy Weaving. Accurately Cut to Any Size.

"THE BANNER"

Hemphill's Latest

A FULL AUTOMATIC MACHINE

Specially adapted to



Manufacture Hose with Linen or Mercerized heel or toe.
Also for

Plaited Goods

and

String Work

High Splice

and

Double Sole

Largest Production

More Yarn Changes

Highest Speed

Simplest

Least Repairs

Produces a Superior Quality of Work.

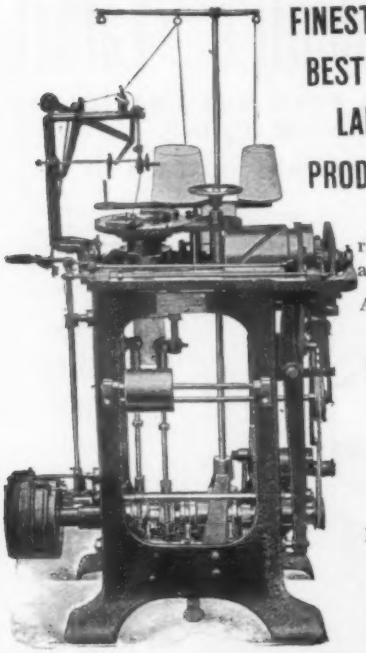
MANUFACTURED BY THE

Hemphill Mfg. Co.

131 Clay Street, PAWTUCKET, R. I.

"NATIONAL"

Stands for



FINEST GAUGES
BEST FABRIC
LARGEST
PRODUCT ON

Greatest Variety of Laces and Novelties.

Allautomatic.

Lowest Cost for Operating

Also

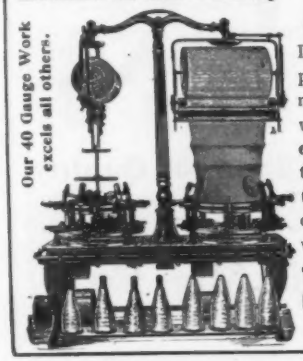
Rib Knitting Machinery, Overedge, Crochet and Shell Stitch.

NATIONAL AUTOMATIC KNITTER CO.

1028 Susquehanna Avenue. PHILADELPHIA, PA.

We are the Oldest Manufacturers

of this Design of Spring Needle Knitting Machine in this Country



40 years' experience

Do not be misled by people who became manufacturers in 1903 without any previous experience who are trying to represent that they are the oldest manufacturers. Investigate. Call and see our fine gauge work.

Robt. W. Gormly & Co.
Troy, N. Y.

The New Boss Seamless Knitter

Do you want the biggest production with the least menders, for the least money? If so, write to the Boss Knitting Machine Works for their circular with full directions. There is no cylinder to be handled. We use only one cylinder and transfer device for half hose or ladies' hose. This machine beats them all. Has no equal for simplicity and durability. Makes 300 revolutions per minute. Built in sizes from 2¼ to 5½; from 40 to 224 needles. Automatic in heel and toe. It is the strongest built knitter on earth.

Send for prices and particulars.

THE BOSS KNITTING MACHINE WORKS,
Cor. Elm and Reed Sts., Reading, Pa.

"Acme" and "Hemphill"

SEAMLESS HOSIERY

Knitting Machines

built by

Mayo Knitting Machine & Needle Company

Franklin, N. H.

Answer all purposes in the *most reliable*, *up-to-date*, and *economical* manner. Write us for full particulars.

Manufacturers like our Latch Needles

because we make a superior grade of needles.

Philadelphia Office, Knickerbocker Bldg.

STANDARD MACHINES FOR HOSIERY MAKING

The STANDARD F, with attachments, can make any and all of these fabrics:

Plain Goods
Plaited Work
Three Color Stripes
Tipped Heel and Toe
White Foot
Changed Heel and Toe
Garter Top
Loopers Slack Course

Most Stockings—Best Fabrics—Longest Life

Standard Machine Company

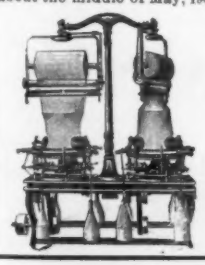
OFFICE AND SHOW ROOMS

330-340 North 12th St., Philadelphia

We Are the Oldest Manufacturers
IN THE WESTERN HEMISPHERE
Of Circular Spring Needle Loop-Wheel Knitting Machinery.

TOMPKINS BROS. CO., Troy, N.Y.

We submit the following extract from the sworn testimony of R. W. Gormly, in U. S. Circuit Court, Northern District of New York, in equity, No. 6764:
Cross Question 123. How long have you been a manufacturer of knitting machines? Answer. I started in this business about the middle of May, 1900.



Tompkins Knitter

This design was adopted in 1875.
BUSINESS ESTABLISHED in 1846, before ROBERT W. GORMLY Was born, according to his testimony in the case above cited.

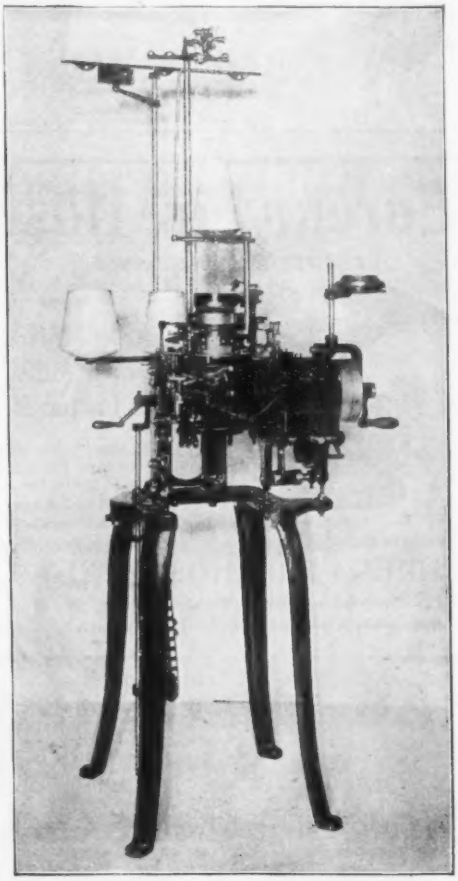
Full Automatic Knitters

For Ladies', Half Hose and Footing, also for

Ladies' Split Sole and Lace Hose

Full Fashioned Legger and Heeler for Full Fashioned Hose.

Measure lengths like a Rib Frame.

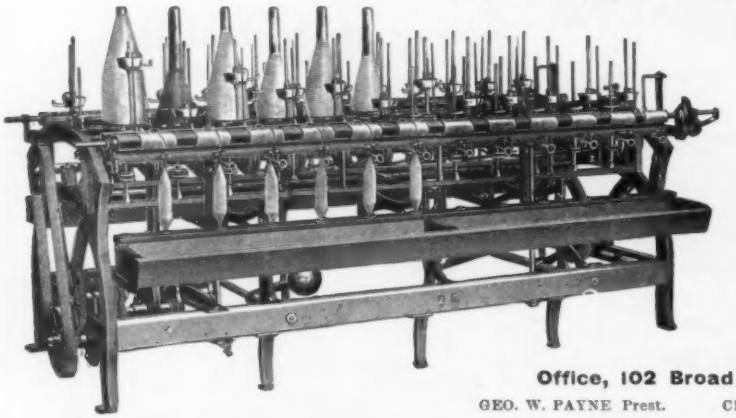


Paxton & O'Neill

537-41 North Third Street, Philadelphia.

OVER 1,900 PAYNE WINDERS IN USE

By Hosiery Manufacturers,
Wind for Cop, Skein or Bobbin.



Improved

Upright Spoolers,

To Spool from Cop, Skein or Bobbin.

Doubling Spoolers for doubling 2, 3, or more ends into one.

Upright Quillers, Quill from Cop, Skein or Bobbin.

Ring Dresser, Spooler and Reel Spindles, Cop Skewers, Warp, Spool, Spooler, Guides, Bolsters and Stops Made and Repaired at Short Notice.

GEO. W. PAYNE CO.,

[Est. 1865. Inc. 1903.]

Office, 102 Broad Street, Pawtucket, R. I.

GEO. W. PAYNE Prest. CLINTON F. PAYNE, Sec'y. and Treas.

Eureka Fire Hose

THE BEST FIRE HOSE MADE.

(Trade Mark.)

For use in

Cotton Mills, Woolen Mills and Factories.

Seamless Woven and Rubber lined EUREKA COTTON HOSE, has no equal. Send for circular and testimonials.

Awarded Gold Medal at the St. Louis Exposition, 1904.

EUREKA FIRE HOSE MFG. CO.

13 Barclay St., New York, N. Y.

Diehl Manufacturing Co.,

ELIZABETHPORT, N. J.

HIGH GRADE

Electrical Apparatus

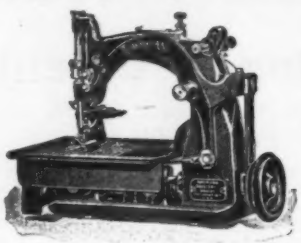
A line of Slow Speed Motors Especially Adapted to Textile Work

American Raveller Company

PHILMONT, N. Y.

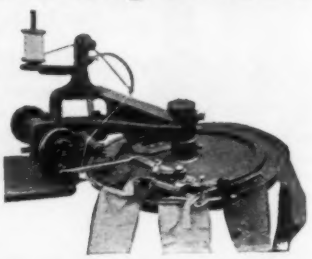
MANUFACTURERS AND PATENTEES OF

High Speed, Elastic Stitch Sewing and Trimming Machines



Also ravelling machines for making knit underwear and hosiery full fashioned.

2 line and twin needle machines for fancy stitching.

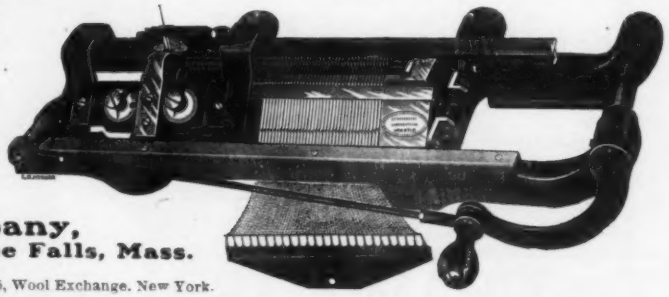


The LAMB

LEADER OF KNITTERS

Original and Still the Best.

Most widely used; being operated in every civilized country in the world. For description, prices, etc., see catalogue.



Circular Machines, Rib Top and Seaming Machines.

Lamb Knitting Machine Company,

P. O. Box, 5888, **Chicopee Falls, Mass.**

J. E. WOODHEAD, 100 22d St., Chicago.
L. D. SANBORN, Room 505, Wool Exchange, New York.

David Richter, Inc.

were the first machine builders in Chemnitz, Germany, to construct

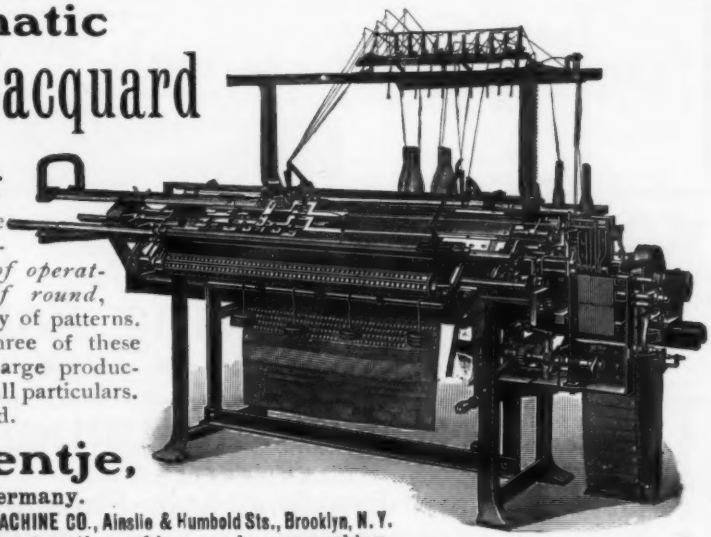
Full Fashioned Hosiery Machines

upon the Cotton principle and which since their introduction have never been excelled by any other machine builder; be it in construction or productiveness. Built in all gauges and for any material, cotton, wool, lisle or silk.

Sole American Representative,

E. O. SPINDLER, 350 Broadway, New York, N. Y.

Full Automatic
Noppen & Jacquard



for high-grade sweaters, jerseys, etc. Latest improvements

Recognized as the best in the market. With Jacquard attachment allowing *change of operating mechanism every half round*, therefore unrivaled in variety of patterns. One operator attends to three of these machines. High speed. Large production. Ask for samples and full particulars. State gauge and size you need.

Claes & Flentje,

Mühlhausen Thr., Germany.

Representatives, **AINSLIE KNITTING MACHINE CO., Ainslie & Humbold Sts., Brooklyn, N. Y.**

Where all kinds of our hand and automatic machines can be seen working.

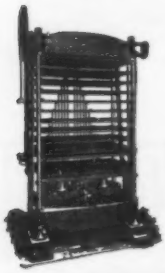
HEPWORTH & CO.'S
Patent Single-Stitch
Looping Machine

Needle working from the inside, avoiding the breaking of needles and points and picking up the metal.

Single and Double Stitch or Both Combined.

JOHN W. HEPWORTH & CO.,
N. W. Cor. Lehigh Ave. and Mascher St.
PHILADELPHIA.

The CRAWFORD



HOLLOW STEAM
PLATE PRESS
For Knit or Woolen Goods.
The most reliable machine of the kind on the market.
PRESS PAPERS and FENDERS.
SPENCE & RIDEOUT,
Successors to
J. J. CRAWFORD & SON,
NASHUA, N. H.
Established 1868.

Patent Loopers

Single, double and two thread Stitch.

with the
Patent Raised
or
Straight Points.

Beattie Manufacuring Co.,
Cohoes, N. Y.

Drying Forms.

BOARDS FOR FAST BLACK DYERS.

HOSIERY FINISHING BOARDS.

BEST WORK. PROMPT SERVICE. PRICES ALWAYS RIGHT.

JOS T. PEARSON 1815-21 TAYLOR ST. KENSINGTON PHILA

Hosiery Boards.

WILLIAM C. BULL,

BENNINGTON, VERMONT.
MAKER OF

For Ladies', Gents' and Children's Goods.
Latest Styles.
Best Workmanship.

Drying Form Boards

OF EVERY VARIETY.

MASON MANUFACTURING CO., Inc.

Makers of

Machinery for Braiding and Finishing Sash Cord.

15 1-2 Chardon Street BOSTON, MASS.

TRY OUR "SUPERIOR", OR SUNKEN RIVET-HEAD NEEDLES
They will save you money.

Dodge Needle Co., Manchester, N. H.

WM. COREY CO.,
Manufacturers of Knitting Machine
Latch Needles
MANCHESTER, N. H.

EXCELSIOR NEEDLES.
The best Hosiery Needles in the market.
Manufactured by
WARDWELL NEEDLE CO., Lakeport, N. H.

WM. BREEDON'S SON,
MANUFACTURERS OF
Spring Knitting Needles
AND BURR BLADES OF ALL KINDS.
AMSTERDAM, - N. Y.

Reels for Cotton WOOLEN AND WORSTED
Patented Hosiery Winders, Cop Winders and Spoolers.
LINDSAY, HYDE & CO.,
2124 to 2130 East York St., PHILADELPHIA, PA.

Standard Latch Needles
MANUFACTURED BY
EXCELSIOR NEEDLE CO.,
TORRINGTON, CONN.
The Largest Manufacturers of Machine Needles in the World.

Longer Wear. Better Work.
Less Mending. Fewer Seconds.
Have you tried our
Patent Milled Rivet?
Agents
C. B. Barker & Co., Ltd., 42 W. 15th St., New York.
Manufacturers' Supplies Co 418 Arch St., Phila.
C. Shawl, 414 Polk St., San Francisco, Cal.
J. C. Strittmatter, 2a Calle de San Francisco No. 9, City of Mexico, Mexico.

L. T. IVES CO.
Manufacturers of all kinds of
SPRING KNITTING NEEDLES
NEW BRUNSWICK, N. J.

KEYSTONE LATCH NEEDLE CO.
JOHN C. EGLY, MGR.
MANUFACTURERS OF
Patent and Regular Latch Needles
Needles for all makes of Knitters and Ribbers.
Keystone Spring Bottom Needles for all makes of Knitting Machines always in stock for immediate delivery.
Special Needles made to order.
543 W. Lehigh Avenue, Philadelphia, Pa.

TEXTILE MACHINE WORKS
THUN & JANSSEN, READING, PA.
Manfrs of BRAIDING MACHINES
for making Dress Trimming Braids, Cotton Tapes, Underwear Braids, Shoe Laces, Spindle Banding, etc. Winders, Doublers. Measuring Machines, Reelers, Singeing and Finishing Machinery. Special Machinery.

The Continental Latch Needle Company.
Manufacturers of the BEST GERMAN NEEDLE on the Market.
RIVETS GUARANTEED. Samples on application. SPRING NEEDLES A SPECIALTY.
120-122 LIBERTY STREET, - - - - - - - - - NEW YORK.

McCormick Turbines

both Cylinder and Wicket Gate, giving **ENORMOUS** power are used in hundreds of textile mills throughout the world.

We make a specialty of designing turbines to meet the requirements of the public.

We build Francis turbines in spiral flumes to operate under high heads.

42000 H. P. in vertical shaft turbines now in course of construction to operate 10 umbrella type generators in power plant of Chattanooga & Tennessee Power Co.

Chicago Office, 644 Am. Trust Bldg.
Boston Office, 176 Federal St.

S. MORGAN SMITH COMPANY, York, Pa., U.S.A.

GEYSER WATER HEATER

U. S. Pat. 873,269

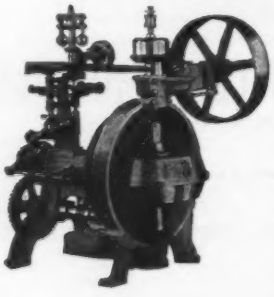
To attach to end of steam pipe for heating liquids in tanks or vats. Modifies that disagreeable noise caused by the direct introduction of a steam jet and raises the liquid to the required temperature in about 70% of time required by latter. By its thorough circulation it distributes an even temperature throughout the tank. Price list upon application.

C. G. SARGENT'S SONS CORPOR., Graniteville, Mass.

Soft Clear Water.

We-Fu-Go and Scaife Water Softening Plants, and Scaife Water Filters can be seen in actual operation in Textile Plants in any part of the U. S. Apparatus designed to suit each special case, and we guarantee results. Write for Illustrated Catalogue.

WM. B. SCAIFE & SONS CO., Pittsburgh, Pa.



Water Wheel Governors

OUR compensating type more fully meets the needs of Textile Mills than any other. This is due to its being the only successful quick acting, mechanical, governor and its perfect control of large as well as small changes. 1500 of this type in use in mills and electric power plants.

Woodward Governor Co., Rockford, Ill.

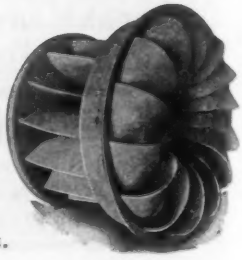
HUNT-McCORMICK WATER TURBINES

CYLINDER or BALANCE GATE CASING

Highest Efficiency, Greater Power,
Easy and Quick Regulation,
Steady Motion, Durability.

RODNEY HUNT MACHINE CO.

ORANCE, MASS.



BRANCH OFFICE: 70 Kilby St., Boston, Mass.

See our Woolen Machinery advertisement on page 41.

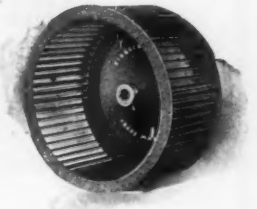
"SIROCCO" BLOWERS

TRADE MARK

The word "SIROCCO" is *guarantee of highest efficiency* when used in connection with Blower Systems of

VENTILATING, COOLING, DRYING, HEATING AND MECHANICAL DRAFT

The Little Blower with immense capacity **"SIROCCO"** The Turbine Blower that Saves Space and Power



"SIROCCO" BLOWER WHEEL
Patented

Our patents cover broadly the principle and construction of "SIROCCO" Blowers. The public is warned against infringement.

Sales Offices New York, St. Louis, Phila., Chicago, Atlanta, Pittsburg.

AMERICAN BLOWER COMPANY

General Offices, DETROIT Works, Detroit, Mich and Troy, N. Y.

SALEM ELEVATOR WORKS

SALEM, MASS.

ELEVATORS

ESPECIALLY ADAPTED FOR MILL USE.

SEND FOR ILLUSTRATED CATALOGUE AND ESTIMATE.

JACKSON BELT LACER

Broad or narrow, heavy or light;
It's all the same, we lace them tight.

A **Jackson Belt Lacer** is the acme of time saving perfection because **one** man can carry the Lacer to the work and Lace the belt right on the spot in less time than it takes to tell.

AND after the joint is made, it stays; again you save time—by never having to repair that same joint.

Just because it's strong, don't think it's stiff; it's as flexible and flat as the rest of the belt.

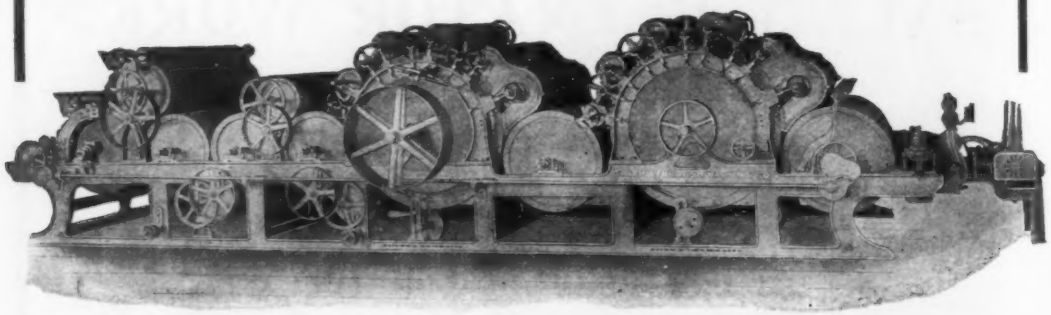
Birdsboro Steel Foundry and Machine Co.
Birdsboro, Pennsylvania

SMITH & FURBUSH MACHINE CO.,

Hancock & Somerset Sts. Philadelphia, Pa.

WORSTED CARDS CIRCULAR NO. 10 A

We build *Iron Cylinder Worsted Cards* with Main Cylinders, 48-in., 54-in. or 60-in. Diameter, and of Many Designs Suitable for All Characters of Work. We Here Illustrate One of These Designs.



NO. 48 WORSTED CARD.

Special features to Remember About Our Worsted Cards are:

Perfectly True Iron Cylinders—Ball and Socket Sleeve Bearings throughout—Case Hardened Journals—Convenient Adjustments—We Invite Comparison with Imported Worsted Cards.

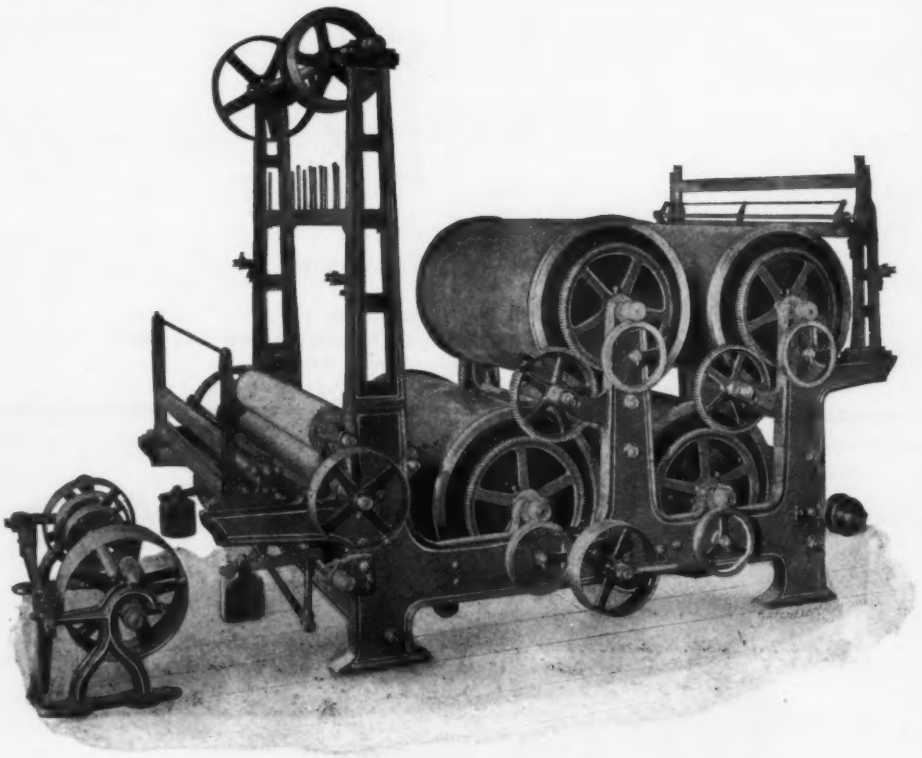
Write for Circular No. 10A

We invite Visitors to Philadelphia, Pa., to see our Machinery in Operation.

SMITH & FURBUSH MACHINE CO.,

Hancock & Somerset Sts. Philadelphia, Pa.

WARP DRESSER CIRCULAR NO. 11 A



WARP DRESSER NO. 124 A

We are receiving many compliments on the perfection in detail of our latest Warp Dresser.

Write for Circular No. 11 A

We invite Visitors to Philadelphia, Pa., to see our Machinery in Operation.

JUL 16 1909

SMITH & FURBUSH MACHINE CO.,

Hancock & Somerset Sts. Philadelphia, Pa.

MANUFACTURERS OF

PICKERS { Lumpers — Rag and Carpet Shredders, Rag, Burr, Wool and Fearnaught Pickers.

WILLOW { Square Box and Cone Willows and Dusters.

GARNET MACHINES { For carding cotton and woolen waste clippings, etc., also for manufacturing cotton batting or felts.

FEEDS { Self feeds for wool, worsted or cotton, also Camel Backs, Blamires, and Apperleys for cards.

METALLIC BREASTS { For Cards and Garnet Machines, Burring Machines and self-stripping feed rolls.

CARDS { Woolen, Worsted, Cotton Waste and Shoddy Cards.

MULES { Heavy and Durable, For Wool and Waste Yarn.

TWISTERS { Plain and Fancy Twisters for Flake Loop or Bourette Yarn.

BOBBIN WINDER { Automatic Jack Bobbin Builder; Adjustable Creel for different length spools.

WARPING MACHINERY { Copper Cylinder Warp Dressers with single and double size pans —Beamers—section warp mills. Warp Mills, Dresser Spoolers for worsted or wool.

GRINDERS { Floor, Traverse and Portable Grinders for Cards, Garnetts or Rag Pickers.

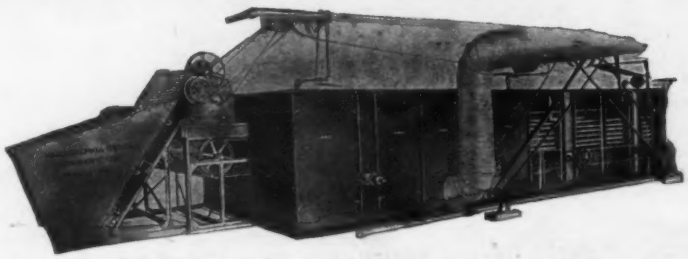
Machinery for manufacturing Gunny Bagging from old Gunny Bagging.

TURNING RESTS — CARD STRETCHERS — FILLET WINDERS AND CLEANING FRAMES

Special Circulars furnished for each Machine.

LOOK ON THE OTHER SIDE OF THIS PAGE.

Proctor **Drying Machines** *Fire Proof*



Yarn Dryers
Scouring Machines
Fans

BUILT of METAL

Stock Dryers
Carbonizers
Hosiery Dryers

Apron troubles overcome by the Interlocking Chain Conveyor

It needs no adjustment

Conveyor Separate from Dryer

Philadelphia Textile Machinery Company

Hancock and Somerset Streets PHILADELPHIA, PA.

CELL DRIER MACHINE CO.

TAUNTON, MASS.

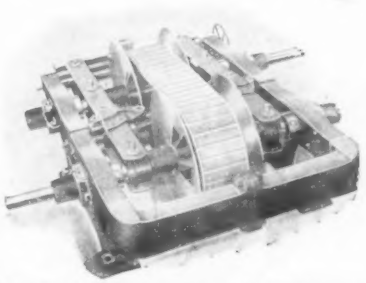
BOSTON OFFICE, 147 MILK STREET.

Builders of **CELL DRIERS** for all drying purposes, are prepared to furnish estimates for complete equipment for Bleacheries, Dye Houses and Print Works. Represent in the U. S. the following well known builders:

Lang Bridge, Ltd.,	England,	General Finishing Machinery
Sam'l Walker & Sons, Ltd.,	England,	Porcelain Jig Rolls
Pickup & Knowles,	England,	Color Strainers and Specialties
S. Spencer & Sons,	England,	Yarn Mercerizing Machinery
Ernest Lehmann,	England,	Waist and Fibre Machinery
Goffard & Co.,	Belgium,	Suction Extractors

THE MILL EQUIPPED WITH

"Reeves" Variable Speed Transmission



for regulating the speed of Slashers, Singers, Drying Cylinders, CELL DRIERS, Printing and Dyeing Machines, Steam Agers, Tenter Frames, Dampeners, etc., produces the best and most reliable results. *Scrap* your Cones.

Enquire of those who are using them.

Reeves Pulley Company,
Columbus, Indiana.

New England Agents,
CELL DRIER MACHINE COMPANY,
Taunton and 147 Milk St., Boston, Mass.

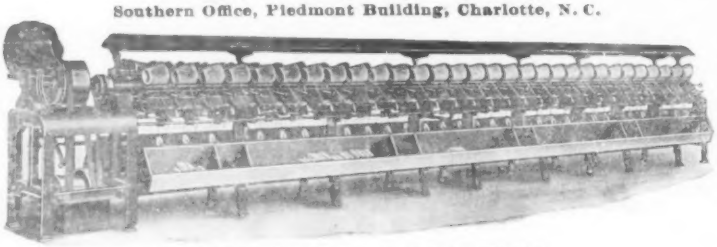
New York Representatives, PATTERSON, GOTTFRIED & HUNTER, 146-150 Centre Street.

Foster Machine Company

WESTFIELD, MASS.

Southern Office, Piedmont Building, Charlotte, N. C.

Cone Winding.
Tube Winding.
Skein Winding.
Quill Winding.
Doubling.



Both "Open" and "Close" Winding Machines for every branch of textile manufacturing.

New Model No. 12 Cone and Tube Winder.

Lombard Adjustable Arch for Worsted Work

With this arch any Workers or Strippers and all top work can be spaced and changed at will. A woolen card can quickly and easily be made ready for Worsted Work, without removing the arch sides—and vice versa. Perfect adjustment and rigidity guaranteed.

Lombard Metallic Breasts

are dividend payers because of their lasting quality. They are made of the finest steel tubing, clothed with the best metallic wire and can easily be re-clothed without injury to the shell.

Remember also that **Rae's New "Century Cards"** are the best. Ask us why.

The Lombard Machine Co.

Worcester, Mass.

The Bell System of Humidifying

Provides the atmosphere with evaporated moisture, forming true *humidity*, not dampness, which penetrates to the interior of the fibrous textile materials, and produces ideal working conditions in the mill.

There are no delicate regulators or switches provided or required.

Catalogue upon request.

THE GRISCOM-SPENCER CO.

90 West Street, NEW YORK

Walworth Manufacturing Co.,

HIGH PRESSURE

VALVES AND FITTINGS

"Walmanco" Pipe Flanges

"Never Stick" Blow-off Cocks, Mill Supplies.

GENERAL OFFICES;

128 FEDERAL STREET, BOSTON, MASS.

New York Office: Park Row Building.